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PRACTICAL REMARKS ON THE TREATMENT OF THE MORE GRAVE AND MALIGNANT FORMS OF SCARLATINA.

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Whether the type of malignancy in scarlatina is imparted by the intensity of the infectious poison, by excess in quantity, or because of the extreme susceptibility of the system to its peculiar action, are questions which remain yet unsolved. But that there are certain prominent and important morbid elements or conditions entering into combination, in more or less degree, which give character to the type in all cases having a malignant tendency, there can be no doubt.

Preliminary to the consideration of the treatment of this form of disease, it is proper and necessary that these various morbid factors which unite for the development of the type of malignancy should be carefully investigated and analysed, with a view of ascertaining and comprehending their full meaning and bearing on the progress of the case, and as a guide for treatment.

During a personal observation of scarlatina extending over a period of more than thirty years, no case presenting malignant tendencies or characteristics has ever presented itself without the following peculiar features, viz.: a very high grade of corporeal temperature; excessive frequency of cardiac action, as manifested by the pulse rate; great debility of the heart, as indicated by the impulse of the organ and the feebleness of the pulse; excessive vital prostration of the muscular and nervous systems; suspension in great part of cutaneous action; a notably defective action of the renal organs, as indicated by the very scanty and albuminous urine, showing from a very early stage of these cases the presence of either functional or organic disease of these important depurative organs.

Frequent, and often intense, vomiting, manifesting the very serious impression made by the infectious poison on the great ganglionic system of nerves, and the functions of organic life. We also observe in these cases usually a partial or entire suspension of the functions of digestion or assimilation.

Another, and one of the most characteristic, of these morbid elements is the lymph-adenitis, which forms so often a conspicuous part in the history of the severe forms of scarlatina.

While these simple facts do not explain the peculiar nature of the infection, whether it is germinal or chemical in character, nor its action in disturbing the vital operations of the economy, they are nevertheless facts always associated with the development and progress of all severe or malignant cases, and claim our attention individually as objects of treatment in the most earnest degree.

From time to time various methods or systems of treatment for this affection have been introduced, and practiced by our profession. Very recently the antiseptic method has been proposed to be used exclusively as an all-sufficient antidote to the action of scarlatinous infection.

Others regard the pure and simple antipyretic plan in which cold constitutes the chief element as superior to all others. The sedative plan, composed of those agents as digitalis, aconite, and veratrum, which reduce cardiac action, and slow the pulse, has many and able advocates. Then there is the eliminative method which I think has not been duly appreciated; by which the portals of the skin and kidneys are opened and these organs are at once made the sewers of the system for the removal of the pent-up poisonous material which has accumulated from the toxic state of the blood and disintegration of tissue, and which is dangerous to life.

Can the Type of Grave or Malignant Cases of Scarlatina be Modified by the Action of Therapeutic Agents?—In my treatment of the severe forms of this disease for the last twelve years, I have acted upon the principle that if the features peculiar to this disease could be modified by treatment, the type of disease could also be modified to a certain extent and the case be converted from a dangerous to a benign form.

A very considerable experience during this period has only tended to confirm this opinion.

I am convinced that many cases of so-called malignant scarlet fever are lost because the disease is regarded as incurable.

Treatment of the more Violent Forms of Scarlatinous Lymph-adenitis.—One of the most frequent forms of the more severe and malignant types of scarlatina met with, is that which is accompanied with very

violent and extensive adenitis of the cervical glands and cellulitis. In these cases the fauces and tonsils are usually extensively involved. The infiltration and swelling of the neighboring cellular structures are usually so great as to impede the function of deglutition, and the muscular movements of the neck.

The temperature always rises to 106° or 107°. The pulse is characterized by great feebleness and frequency, often reaching the rate of two hundred per minute.

The functions of digestion and assimilation are for the time being partially paralyzed. All the indications point to the fact that the blood-making powers are seriously impaired, and the vital condition of the blood is greatly deteriorated.

These cases are exceedingly alarming in character, and if the morbid processes are permitted to proceed unmodified, usually terminate fatally. Can anything be done to modify the type of this class of cases, and avert the tendency to death?

If we reflect for a moment on the two important facts that an over-excited heart is pumping poisoned blood into the inflamed and enormously infiltrated structures of the throat and neck, at the rate of from 160 to 200 pulsations per minute, thereby constantly aggravating the local lesions, while the organ itself is being rapidly exhausted, and that the high temperature indicates a degree of combustion in the vital organism which will inevitably destroy life if not arrested, we are enabled to appreciate the necessity of reducing the action of the heart and the temperature to degrees safe to life. In accomplishing this object two of the leading factors, high temperature and a frequent pulse, in the process of malignancy, are removed, and if the vital condition of the blood can subsequently be maintained at a standard compatible with life, the chances for recovery will be greatly improved. In my experience, to temporize in these cases is to endanger the life of the patient. Success can only result from prompt and energetic treatment. The high temperature and frequent pulse must be reduced speedily to a point near the normal standard. I have seen the accomplishment of this object in repeated instances convert cases with decided malignant features into the benign type. There are two safe and efficient means always at hand to control high temperature. One is the warm bath, either by the immersion of the body in water at the temperature of 80°, or the wet pack at the same degree, repeated every three or four hours until copious perspiration follows:

The patient is permitted to repose in the wet sheet, enveloped in blankets, the entire body being for hours subjected to free perspiration, and of course undergoing the combined antipyretic and eliminative processes. In connection with those measures the sedative treatment is also practiced. For this purpose I have found the following formula well adapted.

℞ Infus. digitalis.....f℥ij.
Tinct. aconit. Rad.....gttxvi.
Spts ammon. arom.....f℥iij.
Spts. nit. eth.....f℥i.
℥ S. A teaspoonful in water every 2 hours to a child of 5 years.

This method of treatment in my experience rarely fails to induce a marked change for the better in the temperature and pulse.

In this manner we accomplish two leading objects simultaneously. My rule has been, in those cases attended with excessive inflammation and swelling of the structures of the throat and neck, a very high grade of temperature, and frequent pulse, to reduce the pulse rate and temperature by the combined agency of digitalis and aconite, as rapidly and steadily as is consistent with safety, down to a standard perfectly compatible with life. This peculiar combination I regard as particularly effective in this class of cases, and whatever dangerous or ill effect the one may exert is counteracted by the other.

In this way many cases of the severe form of what is termed the anginose variety with decided malignant tendencies may be robbed in great measure of malignancy of type, and converted into more simple and manageable forms. With a slow, strong pulse, and a moderately low temperature, the chances for life become at once greatly improved. The combined influence of the sedative and eliminative treatment over the extensive and dangerous swelling of the structures of the throat, usually diminishes the effusion and inflammation permanently, and in proportion to the abatement of fever. Long and continued experience in the use of eliminative measures through the skin and kidneys, principally the former, only tends to increase my high estimation of the great value of this means of treatment in all the more severe forms of scarlatina.

In all grave forms of the affection the skin is particularly dry, and devoid of perspiration. My custom has been, in all of this class of cases, to maintain a free and continuous action of the skin by means of the tepid bath and the wet pack, throughout the course of the attack.

For the purpose of illustrating what may be accomplished in the conversion of a very grave and malignant type of this disease into a very simple and benign form, I will cite the following case: A little boy of six years, in very robust health, in 24 hours after the first indications of scarlatina, became alarmingly ill with malignant symptoms. The eruption was imperfect in development; the pulse so frequent that it could not be estimated. There was great stupor. The temperature ranged at about 106°; the general prostration was correspondingly great. The child was first given a general bath at 80°, then enveloped in a wet sheet at the same temperature, and over this a dry blanket; then put to bed and permitted to luxuriate in a free and delightful perspiration for many hours. When the temperature increased, the same process was resumed. Then he was given a drachm of infusion of digitalis, one drop of the tincture of aconite root and ten drops of sweet spirits of nitre, every two hours, until the pulse and temperature were reduced to near the normal standard. Then the consciousness and vital powers of the little patient returned, and the type of the case in another 24 hours was changed from a very dangerous to a very simple one.

Treatment of the True Adynamic Type of Scar-

latina.—We occasionally meet with a class of cases presenting from the incipiency symptoms of adynamia. The eruption is always of a dark or mahogany color, and not abundant; the pulse is exceedingly frequent and feeble. The urine is dark, very scanty, and often albuminous. There is excessive stupor and prostration of the vital powers, the tongue a dark red and very dry. We all appreciate the gravity of these cases. The treatment which I have found most efficient in this type of disease, consists of the wet pack saturated in water at 80°, with a considerable proportion of alcohol combined, used sufficiently often to maintain a moderate perspiration. The following formula I have found the most useful of all of which I have made trial:

℞ Sodæ sulph.-carbolat.....ʒiss.
Sodæ hyposulphite.....ʒi.
Aqua.....ʒiss.
Infus. digitalis.....ʒiss.
Tinct. nux vom.....xii gtts.

Of this 2 teaspoonfuls are to be given to a child of 5 years every two hours. Alternately with this a teaspoonful of brandy and elix. of calisaya are to be administered.

In these cases the temperature rarely reaches a very high grade. The temperature and circulation are both unequally distributed. The extremities are usually cool and livid, the body hot. The action of the heart is excessively feeble and frequent, often reaching a rate of 200 per minute in very young children. The poisoned condition of the blood renders the dangers of thrombosis of the heart, lungs and brain imminent. This condition is particularly encouraged because of the inability of the heart to maintain an equable circulation. Hence in these cases we need especially a remedy which will both slow and strengthen the action of the organ.

The Treatment of the Malignant Type Due to Early Renal Complications.—In a certain proportion of cases the malignancy of type seems to be due to early renal complications. We observe in these cases the early development of malignant features very similar to those manifested in cases of serious nephritis from more simple causes. Thus there is always tendency to coma. The urine is very scanty, high colored, acid in reaction, and albuminous. The temperature is high, and the pulse rate very frequent. There may be but moderate adenitis, yet the case presents all the indications of gravity and danger.

In all cases of importance I believe it to be our duty to examine the state of the urine throughout the course daily.

Doubtless many cases have assumed the malignant type and ended fatally, solely because of the development of nephritis. In the treatment of these cases all of our appliances, consisting of the warm bath, the wet pack, and if necessary, the hot air bath, for the purpose of inducing copious elimination through the skin should be brought to bear on the patient frequently.

Prolonged observation of scarlatina convinces me that our attention is directed usually to renal complication at too late a period of the case, and that treatment is often delayed too long. In cases of nephritic complication with high grade of fever and frequent pulse, I have found a combination of alkaline diuretics with sedatives of infinite service. The alkaline diuretics can not only be given freely in these cases without harm, but with benefit. In my experience it is best to maintain the urine in a perfectly neutral and bland state, so that its acids cannot act as irritants and thereby aggravate the existing inflammation. I have found the following formula a valuable one under these circumstances:

℞ Liq. potass. citratis.....fʒiss.
Potass. bicarb.....ʒij.
Spts. nit. ether.....ʒiij.
Tinct. aconit. Rad.....xiigtt.
Infus. digitalis.....fʒi.
m. A dessertspoonful every 2 or 3 hours to a child of 5 years.

This combination of therapeutic agents usually exerts a most favorable influence over the engorged and inflamed kidneys. Their functions are always improved and generally restored. At the same time the action of the heart is slowed and strengthened; the abnormal temperature is reduced to a point of safety and the nervous centers relieved.

In connection with this method the patient is fed liberally on skimmed milk.

I do not remember ever to have seen a case of organic renal disease or dropsy following scarlatina in an exclusively nursing infant. Whether this is due to the exclusive milk diet, to the exclusion of animal food, or to the better care or protection from cold is not known.

The Treatment of Protracted Adenitis, followed by Abscesses and Symptoms of Pyæmia.—In the severe anginose form of the disease, protracted adenitis, followed by a long line of abscesses in different portions of the system and symptoms of pyæmia, occasionally occurs. The fever is usually hectic in character. The temperature rises and remits at certain periods of the day, followed occasionally, but not always, by exhausting perspirations. The tongue is usually red and dry. There is complete anorexia; symptoms of adynamia are always present. The process of emaciation is progressive. These morbid processes may continue in operation for many weeks, and either end in death or restoration.

I have found in this particular affection no combination of remedies so effective as the tinct. of the chloride of iron, arsenic and digitalis. I usually give to a child of five years, five drops of the iron, one-third of a drop of Fowler's solution of arsenic and three drops of the tinct. of digitalis every four hours. This method of therapeusis should be maintained until the pyæmic tendency has been arrested. In this place I regard the arsenic as an important ingredient.

When the tendency to exhausting perspiration is decided, I usually combine the tinct. of belladonna.

Treatment of the Convulsions of Malignant Scarlatina.—A history of the treatment of scarlatina would be very incomplete without allusion to the subject of convulsions. Usually in these cases renal complica-

tions are present, and must receive a share of our treatment. The pulse in these cases is usually very frequent and the temperature high. The entire voluntary, reflex, and ganglionic nervous centres are all profoundly affected by the infectious poison. To relieve the circulation of uræmic poisoning, which is generally present, and to prevent that irreparable damage to the brain which results from the capillary thrombosis and extravasation of blood that may arise from the violent and unequal action of the heart, our remedial agents should be addressed to the eliminative organs, the reflex nervous system, and the general circulation. Elimination through the skin and kidneys, as heretofore advised, should be assiduously practised. Chloral hydrate, to control the over-excited reflex centres, and veratrum viride combined, have been more efficient in my experience as a means of reducing cardiac action and regulating the unbalanced circulation than any other agents. Five grains of the chloral and one or two drops of the tinct. veratrum act well after the functions of the skin have been restored. These remedies should be repeated every two hours to a child of five or six years until the object has been attained. In dangerous cases of this kind I regard the use of the veratrum as an important addition to the treatment. In my own hands, when combined with chloral, it has been more prompt, energetic, and decided in repressing the convulsive tendency than any other therapeutic agent.

Treatment of Scarlatinous Pharyngitis.—After a trial of the various local remedies devised by myself and recommended by others, I have reached the conclusion that a combination of astringent and antiseptic agents, composed of bromo-chloralum ʒi, the antiseptic vegetable compound known as listerine ʒij, pulverized alum ʒij, carbolic acid xgtt, diluted with rose water ʒiv, either used by means of gargling, the atomizer, or brush to the inflamed surface, constitutes the most valuable of all the local applications. I feel sure that the absorption of the antiseptic properties through the mucous surface is in such quantities as to exert decided effect. Two or three drops of carbolic acid, when applied to the cervix of the uterus, will be tasted by the patient almost instantaneously.

I have faith, also, in the value of antiseptic agents applied to the cutaneous surface. When carbolic acid, salicylic acid and ointment of rose water in combination are applied to the skin, they act not only as an emollient, allaying inflammation and irritation, but the antiseptic agents being spread over a vast extent of surface, are largely absorbed, and exert their peculiar influence in correcting the septic processes going on within the system, thus saving the digestive organs the ill effects of their influence.

In the selection of nourishment we should be influenced both by the condition of the digestive organs and the renal functions. In cases of seriously impaired digestion, irritable stomach, scanty, albuminous and acid urine, the best method of administering nourishment, in my experience, is in the form of skimmed milk, containing a small amount of bicarbonate of soda in solution, and combined with one-third lithia water. This may be continued so long as these symptoms exist.

In all serious cases preference is given to the alkaline lithiated milk as a constant diet. The milk is evidently better digested and assimilated than any other form of nourishment. It is in this form exceedingly bland and unirritating to the renal passages, and affords relief to the engorged and inflamed kidneys. It is given abundantly, and almost exclusively. This form of diet not only serves a good purpose during the acute stages of the disease, but acts well as a prevention of renal sequelæ.

THE RELATION OF BACTERIA TO INFECTIOUS DISEASES.

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Read before the American Academy of Medicine, Baltimore, Oct. 28, 1884.

No subject in medicine either in relation to its theory or practice holds at present in any considerable degree an interest equal to that of the rôle of micro-organisms to disease. Although in a strict sense not new, it is only within a very recent period that systematic study and scientific research have invested the theme with an interest by any means general, or elevated it from the domain of speculative philosophy and pseudo-science. Recent as have been the investigations, it is marvellous to find the flood of literature already contributed.

Notwithstanding the interest and importance of the subject, this contribution might not have been added to the list had I not listened to a series of six semi-popular lectures delivered in Boston within the year, in which course the entire subject was carefully reviewed and in a most labored argument it was deduced that the fundamental basis is wanting upon which the entire system of the germ-theory of disease is founded; that there is no real proof that fermentation even, is caused by the development of a low order of vegetable organisms. This sweeping assertion was based upon the statement that the various classes of micro-organisms in any of the series of experiments had never been separated from the "ambient, organic, living matter" which must be considered to have a low degree of inherent vitality, and that, as a consequence, it can not be determined what, in the subsequent changes, is due to the germ development and what the rôle of the ambient living matter may be. This, in the mind of the objector, would pertain as distinctly and definitely to the so-called pure cultures, or many removes from the primary infection, where, it is obvious, that only an infinitesimal quantity of the original material could remain, since the ambient living matter might have been reproduced indefinitely as well as the mingled germs. With an emphatic pointing of the argument it was declared "that not until it had been demonstrated, what would ensue, after a well-washed micrococcus or bacillus had been isolated upon the point of

a needle and then introduced into a sterilized, nutrient solution would the real conditions of the problem be fulfilled."

Anything may be doubted. There are many who would not accept the demonstration of any historic fact; and even mathematical formulation, or axiomatic truth would by some be questioned. However, it is well to have even the old, established creeds and codes occasionally reëxamined and reviewed by the keen criticisms of opponents, for "Science is only pure and simple truth," and never suffers by test.

Negative proof may assume a value not less than positive demonstration, and yet, when we come to accept the gauntlet thus thrown down, we shall find the defenders of the germ-theory are not reduced even to this exigency. Let us separate the problem as formulated by Dr. Longstreth into its component parts, the ambient, living matter and the germ. We grant that the former has, under certain conditions, an inherent vital power, which is indeed no new discovery, but has been accepted by many of the best investigators. It has been known under different names, but, perhaps, most widely under the excellent definition given by Dr. Lionel Beale as bioplasm. In the differentiation of the organic material which serves as food, there must evidently be somewhere along the series a point where the protoplasmic masses are imbued with a certain vital power. Let us admit that this hypothetical point be accepted as bioplastic, that the material in a considerable share is particulate, and that it has its highest expression of effect when in the greatest degree "ambient." I think we may safely assume that in the blood of a healthy animal we should find this ambient living matter in its highest potency. In order to determine the bioplastic powers of the liquid, ambient, or protoplasmic matter, I decided upon a series of careful laboratory studies, in the execution of which I am greatly indebted to my assistant, Dr. Samuel N. Nelson. The blood of healthy animals, sheep and oxen, was taken with careful precaution at the abattoir in flasks, sterilized by heat and immediately protected by carbolized gauze. As soon as the blood clot had separated by standing, sterilized glass bulbs were filled and sealed in the flame, and others charged with sterilized, culture fluids were inoculated in varying proportions, following the method which I have adopted in the study of germicides and micro-organisms. These were kept for different periods of time subject to the same conditions as in the growth and testing of various bacterial organisms. Careful microscopic examinations were made at different data with a Zeiss fourteenth objective, giving an amplification of about a thousand diameters. In only one of more than twenty bulbs did any change take place, and this upon its first opening, the third day, remained sterilized. Albumen from the egg yet warm from the nest, milk aseptically milked and put up at once, and the aqueous humor were also tested. In a series of forty-five bulbs, only two contained bacteria-termo and micrococci, which evidently were accidentally introduced, since one was a sterilized bulb inoculated with serum, and the other was fertilized when opened a second time the seventeenth day, which was sterile upon the ninth day when first examined. In the rest of the series no changes ensued, and no micro-organisms developed. See table.

RESULTS OF TESTS WITH "AMBIENT ORGANIC MATTER."

SUBSTANCES.	TOTAL.	NO.	DAYS.	RESULTS (F. 3.)
Serum from sheep's blood.	7..	4	6	Some protoplasmic masses as in fresh serum
		1	9	ditto.
		1	11	ditto.
		1	16	ditto.
Bulbs inoculated with sheep's serum.	18..	5	6	Five unchanged, one contained micrococci and bacteria termo active.
		2	9	Unchanged protoplasmic masses.
		1	11	ditto.
		1	16	ditto.
		8	17	ditto. Also one opened at 9th day contain micrococci and bacteria termo active.
		1	8	Same protoplasmic masses this one inoculated after nine days.
Serum from ox's blood.	2	2	6	ditto.
Bulbs inoculated with ox's serum.	4	2	6	ditto.
		2	17	
Aqueous humor sheep's eye.	2	2	6	ditto.
Inoc. aqueous humor sheep's eye.	3	3	6	ditto.
Inoc. milk.	4	3	4	ditto with same.
		1	5	ditto "
Albumen of egg.	2	2	5	ditto.
Inoc. ditto.	3	3	5	ditto.
Total,.....	45			

It seems from the above experiments a clear deduction that the ambient living matter, upon the germinal qualities of which so much emphasis has been placed, possesses no power of reproduction, and that, at the most, it is an organic nutrient fluid serving the highest purpose for bioplastic uses, but having in itself absolutely no independent, inherent power of growth,

This, indeed, is what has been assumed *a priori* to be true by most investigators and, so far as I know, had never before been questioned. Blood serum has been selected by many of the most distinguished observers as the best possible culture fluid for the growth of micro-organisms, never suspecting that in the fluid itself there could be a source of error.

Numerous experiments familiar to all students of the subject have conclusively shown that when blood has been taken under proper precautions from a healthy animal, it undergoes no decomposition and is absolutely free from all bacterial organisms. The only objection to blood as a culture medium has been found in the presence of the corpuscles, which, after a time, may break up and present a granular debris, thus rendering the recognition of micrococci more difficult.

This is not the occasion to enter upon the character or the classification of micro-organisms. At the present, no one denies their vegetable nature. That they are organic and have an inherent, independent vitality is proven by their distinctive shape elements, spontaneous, independent movement and powers of reproduction. The rôle or relationship of these

minute organisms to disease is a question the importance of which cannot be over-estimated, and, if the relationship of cause and effect in the class of zymotic diseases be demonstrated, medicine will at last have for its foundation a scientific basis.

Although we may accept the formulation that, "Science is pure and simple truth," no question probably ever presented, the solution of which is involved in greater difficulty. It is very doubtful if the time has arrived when generalization may be made or formulation adopted.

In the rapidly accumulating evidence from many independent investigators, however, it is not too much to believe that such a period may belong to the early future. To demonstrate the causal relationship of germs to disease, the micro-organism in question must be isolated, or separated from any other material which could be called in question, be it "liquid ambient matter," organic, or chemical poison having relationship to the disease. This organism thus separated must, upon inoculation into the tissues of a healthy, living animal of the same species, cause a reproduction of the disease under consideration, in other words, the micro-organism must "breed true."

The objection already referred to was that, to carry out the requirements here given, "the germ must be isolated, well washed, and then introduced into a sterilized, culture fluid."

To accomplish a purpose, believed to be equally satisfactory, the process of so-called pure culture has been devised. This is to infect a sterilized bulb or solid culture with a minute quantity of the original virus, and upon development to inoculate from this a second, and so on to the end of a given series. Pasteur was among the first to devise this method, and show the extreme subdivision of the original material thus obtained. I quote an illustration of this from the experiments of Dr. Sternberg: "My culture-tubes contain about a fluiddrachm of sterilized bouillon. The amount of infective material introduced into culture No. 1, as seed, was considerably less than a minim; but for convenience I will suppose that one minim is used each time to start a new culture; that is, the original material is diluted 60 times in the first culture, 3,600 times in the second, 216,000 times in the third, and in the eighth culture it will be present in the proportion of 1 part in 1,679,611,600,000,000. Yet a few minims of this eighth culture possesses all the virulence of the first."

Let us grant that a certain quantity of the so-called sepsin, a chemical poison of any conceivable virulence, accompanied the primary infection, and that it was possible for it to be produced by chemical changes set up in the nutrient fluid *pari passu* with the growth of the organism; then we would find that upon subcutaneous injection into an animal it would act promptly and bear an effect in direct relation to the quantity thus used, either killing the animal, or being eliminated and recovery ensue. Contrast the effect of a septic inoculation. Hours after the injection the animal appears in its usual health, and slowly sickens. If death ensues, it is never until sufficient time has elapsed to allow the reproduction and growth of the micro-organisms; and, upon examination, the tissues and fluids are found to contain, in active development, immense numbers of organisms, in morphological characteristics identical with those of the original infection. These experiments may and have been repeated in long series with unvarying result. In still further evidence that the morbific poison is particulate and dependent upon the micro-organisms present, the experiment of filtration has been repeatedly made where the most virulent of septic, poisonous material was thus treated, and the filtrate injected into a healthy animal with negative results. Klebs first showed that filtration caused anthrax blood to lose its infectious properties, although the filtrate acted as a local poison. Toussaint repeated these experiments with similar results, and Eberth's experience with the filtrate of diphtheritic poison gave at the points of injection only local inflammations, without any marked general symptoms.

In anthrax, where the rôle of the bacilli has been very carefully demonstrated, seemingly beyond the denial of the most captious critic, only recently did I hear it publicly and seriously urged that death was not caused by the bacilli of anthrax, but was mechanical, and, as it were, accidental, since the extraordinary size of the bacilli caused a plugging of the capillary circulation in the lung, and death ensued as by strangulation.

How such puerile objections could for a moment be seriously advocated, or accepted, acknowledging but ignoring the *causa causans* of disease, is beyond comprehension. However, by such queries, we are led to consider, if disease and death are the result of the growth and development of such organisms in the living body, in what way is such result brought about? Is it by occluding the blood-vessels, causing stasis, arrest of circulation, and, as a result, local death of tissue; *i. e.*, mechanical? Does it devitalize the tissues by abstraction of nutriment for its own uses, deoxydizing the blood? Does it also generate in its growing a morbific virus which is inimical to life; or does it, by its abstraction of certain constituents necessary to its development, cause chemical changes in the construction of highly organized, vital elements, as the yeast plant in its growth in saccharine solutions produces alcohol?

There can be little doubt but that in each of these several ways, sometimes separately, more often combined, does injury result by the development of these minute organisms. Did it not carry us beyond our present limits we should discuss the individualistic resistance to the invasion and growth of micro-organisms within the body of the living animal. This must, at least in a large share, be ascribed to a property in the living organism, a vitality which renders the development of the bacterial growths abortive, or imperfect. Reduce this standard, lower it to a hypothetical given point, and the complex organism becomes an easy prey to the omnipresent, unseen, yet potential forces which are ever in waiting to take it to pieces and refit it for new and perhaps higher uses.

The vital equations in the life processes are among the most complex and difficult of all in the study of the animal economy. They meet us at every turn

when we investigate any of the pathological changes. The reason why, in some animals, micro-organisms cannot be made to grow at all, while in others, seemingly equally healthy, they fructify and speedily cause death, must be sought in the peculiar vital or resisting power of the individual or the species. This has evidently been overlooked or underestimated by many in their deductions upon this subject. The cell changes which follow localized irritation furnish an excellent illustration. Lymphoid, epithelioid cells, or granulation tissue, is proliferated in protection and, in the development series, connective tissue ensues and repair is completed. Arrest the process at its earlier stages and degenerative changes take place, and it is in this way that conditions are produced favorable to germ development. Thus, simple depreciation of vital force may be the first term of a series ending in death, to which, as it were, are added only accidental factors.

There are many questions relating to the subject upon which we are at present and perhaps must ever remain ignorant. How do certain forms of infectious disease grant immunity from subsequent attack? Answers only of a purely speculative character have as yet been suggested. In what way, upon recovery from attack, do the morbific, germinal materials disappear? Here again all positive demonstration is wanting. Sternberg suggests that the disappearance of the bacteria from the circulation may be effected by the superior vitality of the white corpuscles which in their amœboid motions may surround and assimilate the captured bacteria.

What are harmless and what are pathogenic bacteria? May the one develop from the other; are they modified by the media in which they grow, may a micrococcus develop into a bacillus, a bacillus into a spirillum? Do each of the infectious diseases have its *sui generis* germ? These again are questions of intense interest engaging the attention of many scientists at the present, but upon which little can be declared as settled. Reviewing these phases of the subject, beset with so many difficulties, it is encouraging to be able to differentiate somewhat clearly, however, the known from the unknown, and to be certain of the establishment of facts of fundamental value and importance.

In this review of the more recent demonstrations of the germ-theory, we must limit ourselves to a small number of diseases. The study of anthrax is the most instructive because the most complete and demonstrative. Pasteur followed a series of one hundred cultures to find the last as virulent as the first. Koch continued the experiments in septicæmia with mice to over fifty repetitions, not only to demonstrate the breeding true, but also that as a rule one-tenth of a drop was an ample quantity to induce a fatal result. Contrary to that found in anthrax, the bacilli here are extremely small.

The rôle of the bacillus tuberculosis has been so satisfactorily established by Koch that a large number of our best observers accept the conclusion of cause and effect as demonstrated. No one subdivision of the question probably holds an interest and importance equal to this at present. Dr. Fergerson publishes in the *Medical Record*, July, 1883, a compilation, as a statistical table, in which he states that in 2,509 cases reported, 2,417 cases contained bacilli. The most noteworthy fact in reference to the cultivation experiments of the bacillus tuberculosis is their slow growth. Koch cultivated them at a temperature of one hundred and four. It was not until the tenth day that active development supervened. Five successive cultures occupied fifty-four days. With this culture four guinea-pigs were inoculated, and upon the thirty-fifth day all were found undergoing extensive tuberculosis. A series of injections into the eye gave somewhat similar results. One inoculated with pure serum, "liquid ambient matter," remained healthy. Three inoculated from a series of cultures which had been carried on for one hundred and thirty-two days gave reproduction of typical tuberculosis. Similar experiments with greater or less care have been repeated in various countries giving in large share confirmatory evidence. In the discussion of the subject, unfortunately the partisans of their various views have often lost a wise judicial discrimination, and at such hands the advancement of science suffers.

Dr. Formad, of Philadelphia, has imparted much knowledge in his publications upon the subject, but he has failed in his attempts to reproduce from his so-called tubercle of irritation true tuberculosis.

Evidently the first point to define is, what is tubercle? If only consisting of lymphoid, embryonal, or epithelial cell-growth, more commonly known to us as a low order in vitality of granulation tissue, then we must admit with him that any irritant may produce tubercle, and the more finely divided and widely disseminated the irritant, the more finely miliary and widely diffused the resultant tubercle.

If it can be shown that such tuberculous material, devoid of germ infection, will reproduce upon innoculation into healthy animals, resulting in disseminated tuberculosis, and so on in a given series, then the objections and negative evidence will stand upon the same basis as the positive, and we will be ready to admit the exclusive production of tubercle as not due to bacillary infection. This we had expected would be shown by Dr. Formad, since in his second report which he has published upon the subject he states: "In my own experiments, I found that tubercle produced by inoculation with innocuous material under antiseptic precautions was likewise capable of producing tubercle when inoculated into other animals, having thus the same action as the innocuous material primarily used." Dr. Formad believes the rôle of the bacillus in tuberculosis is simply that of an irritant.

Malassez and Vignal have recently published a most interesting series of studies, experiments, and observations upon tuberculosis produced by micrococci in zoöglea masses in which no bacilli were found. The following are in brief their conclusions:

1. There exist tuberculous lesions presenting no bacilli, and which inoculated give place to tuberculosis equally without bacilli, and yet similar in appearance to bacillary tuberculosis. Similar results were obtained with their culture products. If the presence of the bacillus suffices, according to Koch, to characterize the tuberculous nature of a lesion, the

reciprocal is not true, namely: their absence does not suffice to deny the tuberculous nature of a lesion.

2. In tuberculosis from inoculation without bacilli there are tubercles which are characterized by the presence of zoöglea masses of micrococci which play, in the tissues which they infect, the rôle of foreign irritating bodies and determine in them thus the so-called tuberculous lesions.

3. There are also other tubercles of inoculation, not bacillary, in which we distinguish no well-defined zoöglea masses. They seem due to the presence of micrococci of the same kind as those of the zoöglea masses, but which, instead of being grouped in masses, are strewn through the tissue of granulation and it may be just this dissemination, which, in absence of the special coloring reagent, prevents distinguishing them sufficiently. That which proves this is, that they may, by inoculation, produce anew zoöglei tubercles. It may be possible that these are some in which that form of parasite may have indeed disappeared.

4. These same tubercles, not bacillary, with or without distinct zoöglea, may produce after a greater or less number of generations of inoculations, bacillary tubercles, as if the zoöglea, the diffused micrococci, and the bacilli were simply different forms, or different stages of development of one and the same micro-organism. Yet this transformation from micrococci into bacilli, not having yet been directly established, we have no right to affirm that bacillary tubercle and zoöglea tubercle are of the same nature, although it may be perhaps the most probable hypothesis.

5. Although our zoöglea masses and our micrococci do not closely resemble the described parasites previously mentioned by Klebs, Aufrecht and Toussaint, they may, however, be in some way related to them; but the facts observed do not permit us to determine the question.

There is much difference of opinion upon the communicability of tuberculosis.

Dr. Formad denies that any proof has been produced showing communicability.

Dr. Dreshfield gives the following instance: "In a small town in Germany where in the period of nine years only five children had died of tubercular meningitis, there happened in the course of nine months eleven deaths from that disease in infants under six months, all these children had been assisted into the world by a midwife who was known to be phthisical and who died of phthisis and who was in the habit when attending a confinement to blow into the mouth of the child with the view of expanding the lungs. No mention is made of the number of confinements attended by this woman."

Dr. MacKenzie in the February number, 1884, of the Edinburgh *Medical Journal* details the result of examinations made in seventy cases of pulmonary and laryngeal disease. A little over one-half were well-marked cases of tuberculous disease and in all these the bacilli were found in the sputum and most abundant in the acute cases. The muco-pus taken from the larynx in laryngeal phthisis contained bacilli in abundance. In thirty-three cases bacilli were absent, of which twenty-two were undoubtedly non-tuberculous, and the remainder, although of doubtful character at the time of examination, were proven by their subsequent examination not to be of tuberculous origin.

Bacilli have been found in glanders, intermittent fever, leprosy, malignant œdema, syphilis, and cholera with more or less evidence that they are the producing cause. Dr. Salisbury in our own country was probably the first to declare that the cause of intermittent fever was a minute vegetable growth. His experiments were numerous and made with a care worthy of commendation, when we consider that he was a pioneer in the field. That they were inferential instead of demonstrative is true, but he collated a series of facts and array of evidence which renders his observations valuable and well worthy of honorable mention.

Klebs and Tommosi-Crudeli announced the discovery of the bacillus malaria in 1879. Their experiments were made in the vicinity of Rome and have been repeated with confirmatory results by a number of Italian and German observers.

Dr. Sternberg[1] in New Orleans, in 1880, instituted a series of experimental studies with only negative results. He gives a critical review of the subject at some length and arrives at the conclusion that demonstrative evidence of the *sui generis* micro-organism is yet wanting. He found in the swamp mud near New Orleans and in the gutters of that city bacilli which closely resembled the described organisms. While the proof is wanting that these actually cause intermittent fever, he closes the discussion as follows: "On the other hand there are many circumstances in favor of the hypothesis that the etiology of these fevers is connected, directly or indirectly, with the presence of these organisms or these germs in the air and water of malarial localities."

There can be no doubt of the importance of a better knowledge of soil pollution and in this connection I would call attention to the admirable original work done by Profs. Pumpelly and Smythe, incorporated in their report to the National Board of Health. I am informed that a large amount of original, experimental research by the same authors still awaits publication, because the appropriation therefor was withdrawn.

Last autumn, during the construction of a large sewer in Brookline, to convey the waters of Muddy Brook, used for a long time as an open sewer, the bottom of the excavation was eighteen feet below the the crossing roadway. The cut was through a stiff clay marl. In a specimen of this material taken from the very bottom, were found bacilli perhaps a trifle longer, but otherwise not unlike in their morphological characteristics to the bacillus tuberculosis. They were easily reproduced in sterilized bulbs, but no inoculation experiments were attempted. Last winter I examined a specimen of the clay taken from the bottom of a sewer excavation in Beacon St., Boston, in which I found abundance of active micrococci. The cut had extended through the filling into the

[1] Bacteria. Page 317.

solid clay substrata and was probably more than twenty feet below the surface.

Dr. Andrew Smart, of Edinburgh, published a description of micro-organisms, with drawings, found in the disease called Rinderpest, in 1865. This is claimed to be the first demonstration of bacteria in living tissues.

In glanders several independent observers (Struck, Loffler, Israel, and Bouchardt) have found a bacillus and cultivated it. When inoculated into the nasal cavity of animals (horse and rabbit), it has produced typical glanders. Hansen, of Norway, has made a most interesting series of studies upon leprosy. In the tubercles or nodules he finds a bacillus which he describes and figures. It is in appearance not unlike the bacillus tuberculosis, and Neisser has confirmed Hansen's demonstrations. The bacilli were successfully cultivated, but the inoculation experiments have given only negative results.

A simple review of the work done in the study of the relation of micro-organisms to typhoid fever would in itself make an interesting paper. When we remember the intestinal canal in health is the home of an infinite number of actively growing bacilli, we can at once appreciate one of the difficulties which meets the observer at the very outset. These, undoubtedly, infect the ulcers and necrosed tissues; but by a number of observers, notably Eberth,[1] bacilli have been found in the mucous membrane, lymphatic glands, and spleen. Koch is of the opinion that the bacillus of Eberth is the only one which holds to the disease a specific relation. It is a short, thick rod, and stains less deeply than the bacilli of putrefaction. The member of the bacillary family which seems to play a specialistic part in the causation of disease, latest discovered, has been reported by Dr. De Lærada, of South America, as the bacillus of beri-beri. His studies were carried on after the method of Pasteur, in the physiological laboratory of the National Museum at Rio Janeiro. Beri-beri is an obscure disease, introduced many years ago into Brazil from India, and in certain provinces is very fatal. Bacilli were found in the blood, but especially in the muscles and spinal medulla. These were isolated by cultures and inoculation experiments produced a reproduction of the disease in animals. From these again cultures were made and the series reproduced. It is believed the origin of the disease is found in certain conditions incident at times to the rice, and in the districts most subject to the disease rice is the principal article of food. Micro-organisms not unlike those of beri-beri were found on the rice, were cultivated, and injections of the culture were made, using guinea-pigs; death ocurred from thirteen to twenty days with paralysis, and bacilli were found in the spinal cord and muscles. The demonstration seems complete, but farther investigations are promised.

Dr. Sternberg's admirable report of the Havana Yellow Fever Commission must be briefly referred to. His studies of the blood were certainly made with the utmost care, and his photo-micrographs are of the greatest perfection and beauty. From the present better knowledge of the rôle of micro-organisms in disease, it is questionable if more satisfactory results might not have been obtained, if the lymphatic and glandular systems had been equally carefully studied. Although he demonstrated no micro-organism which could be considered as causal, there are a number of observers who claim to have found it. Dr. Freise, of Brazil, describes an organism which he thinks may remain indefinitely in the soil, and which he finds rapidly reproduced with fatal results in rabbits and guinea-pigs. His observations would, however, seem to require confirmation. The whole subject demands a most complete and painstaking examination.

Cholera holds the first place in popular interest at the present time, owing to its ravages in Europe, and the widespread fears that it may yet become far more general, and extend to America.

The medical profession have followed with an intense interest the investigations of the cholera commissioners in Egypt and India during the last year. Their reports must be considered by all as of great importance, and are contributions of especial scientific value. Few questions can be more complex, or investigated amid such an array of difficulties. The micro-organisms which in health infest the digestive tract are various, and in numbers utterly incomprehensible. Their histories and the modifications which they undergo, subject to a great variety of diseases, are but little known. Much work by reliable observers is requisite as a preliminary to the satisfactory study of an epidemic of cholera. I would urge that the attention of all practitioners possessing the requisite knowledge, should be given to a careful study of such conditions, and thereby contribute to the solution of many questions yet unsolved.

Another difficulty, which does not pertain to the study of many pathogenic germs, is the well-established fact that cholera does not infect the lower animals. Hence the very important evidence deduced from inoculation experiments with the organisms or their cultivations is here wanting. In the sixth cholera report written by Dr. Koch, it is stated that the bacilli which, in their earlier reports, the Commission were unable to determine as strictly limited to cholera, were now accepted by them as holding a specific relationship. The distinguishing characteristics given to the organisms are, briefly: "They are not quite straight, as are the other forms of bacilli, but are slightly curved, comma-like; this bending may be even so marked as to be almost semicircular. From these curved stems, S-shaped figures, more or less elongated, slightly undulating, linear forms may be developed in pure cultivations, of which the first two segments and the last correspond to the form of the bacilli as found in cholera, and which, continually increasing in number, remain attached to one another." Thus they closely resemble a spirrillum, and may ultimately be classed with it. The voluntary movements were very active. These bacilli were found in all the intestinal discharges, and in the contents of the intestinal canal at post-mortem examinations, but not in any other

[1] "Der Typhus-Bacillus und die intestinale Infection."

disease, and only in one instance in the various specimens of dirty water examined.

Dr. Koch, in discussing the relationship of these growths, states that the development of the supposed specific bacteria can only be favored by the cholera process, or that the bacillus is the cause of the disease, and that the disease is only induced when it has found its way into the intestine of man. If the first supposition is allowed, these bacilli are always present in health, which is stated as not the fact. Therefore he concludes that the growth of the bacteria cannot be due to the cholera process, and there is nothing left but the inference that it is itself the cause of the disease. Many other circumstances are emphasized as pointing to the same conclusion. They are limited to the organ which is the seat of the disease. They invade its tissues, which become markedly metamorphosed. In the earlier dejections of a cholera patient, so long as they are still feculent, the bacilli are few, but the subsequent watery, nearly odorless, characteristic dejections contain the bacilli in immense numbers, and coincidently all other bacteria disappear almost completely, so that in this stage of the disease an almost pure cultivation of the bacilli is obtained; conversely, the comma-like bacilli decrease and disappear completely during convalescence. This general relationship holds good, also, as observed from post-mortem examinations. There can be no doubt but the study of the present epidemic will contribute much to our knowledge.

The great majority of observers in India and elsewhere give it as their unqualified opinion that cholera is infectious, and may be transmitted not only from individual to individual, but in a variety of ways to great distances.

From this belief has arisen the very generally adopted system of quarantine. It is greatly to be deprecated that the English government, under advisement of Drs. Hunter, Foyer and Cunningham, themselves not only very distinguished men, but especial observers in Egypt and India, has given official expression to its disbelief of the value of quarantine regulations.

"Her Majesty's government offers a serious and well-founded objection to the theory generally admitted and the custom of quarantine. Sanitary measures have proved to be the only efficacious means of impeding the march of an epidemic."

I am free to confess, this was my own opinion formerly, and I held quarantine regulations to be respected simply because they had been formulated as laws. I must now think otherwise, since the weight of evidence would render it hard for the unprejudiced, judicial student to disbelieve in the communicability of cholera. A large volume itself would not contain the facts already collated. Dr. C. Macnamara, in a lecture published in the *British Medical Journal*, March 15, 1884, upon Asiatic cholera, states that for a long time he could not himself subscribe to the communicability of cholera, but a careful historical research convinces him of the fact, and he gives this illustration of his own personal experience: "A small quantity of a fresh rice-water stool, passed by a patient suffering from cholera, was accidentally mixed with four gallons of dirty water, and the mixture exposed to the rays of the tropical sun for twelve hours. Early the following morning nineteen people each swallowed about an ounce of the contaminated water; they only partook of it once, but within thirty-six hours five of these nineteen persons were seized with cholera. In this case the cholera evacuation did not touch the soil; as it was passed, so it was swallowed, but (and this is the most important part to remember) it had been largely diluted with impure water, and the mixture had been exposed to the light and heat of a tropical sun for twelve hours. In the year 1872 I was engaged in making some experiments on monkeys. For this purpose I exposed to the sun some fresh cholera dejecta in a pail full of dirty water. The following morning, at about 6:30 A. M, I and my assistant were shut up in a close room with these monkeys, experimenting upon them with this diluted cholera stuff. By 2 o'clock the same day I was suffering from a severe attack of cholera, and the same evening my assistant was seized with the disease. We were both of us very dangerously ill, passing into a state of collapse in a few hours after the commencement of the symptoms. The monkeys escaped without the slightest ill effects from our endeavor to give them cholera."

In the same journal for October, 13, 1883, (page 727) Surgeon General James Irving of the Bengal Army adduces certain facts showing the conveyance of cholera in India and they seem so conclusive that I briefly reproduce a portion of them here: Surgeon-Major H. B. Purves was stationed at Darjeeling in 1876. This is in the Himalayas, forty miles above the plains, 7,000 feet above the level of the sea and approached by a single road. The population was scanty, the climate healthy, and numerous tea gardens were scattered about the adjacent country. "Early in June, there was a regular cholera wave over the whole district, lessening in the plains, but rapidly increasing among the hills. Large gangs of coolies who had bolted from the lower ranges, had entered the hills, and were roaming about the forests, in some instances carrying their sick with them." In July a great and general improvement took place, and by August the disease had disappeared. The mortality reported by the police (who are the collectors of medical statistics in India), was 1,729 out of a population of 94,712, though Mr. Purves considers that there were at least twice as many deaths. Mr. Purves instances "special cases where human intercourse seemed undoubtedly to be the immediate cause of the appearance of cholera." He does not name the gardens referred to, but alludes to them by numbers.

"Garden No. 1.—The disease had been prevalent for some time at an adjoining estate. No case occurred until a man happened to go to the infected garden to bury his sister, who had died of cholera. Shortly after his return, he was attacked and died; and the result was a severe and fatal outbreak, causing a mortality of 150 among a population of 1,500.

"Garden No. 2.—The manager states that the infection was distinctly traced to communication with a bazaar close by. Seven hundred deaths.

"Garden No. 3.—It was discovered that new coolies from an infected garden had lately settled in the lines when the first case occurred. Eighty-five deaths among 650.

"Garden No. 4.—The outbreak was traced beyond doubt to the advent of new coolies from infected parts of the terai. Two hundred and eight deaths in 1,700.

"Garden No. 5.—Eight new coolies offered themselves for employment at a garden near Darjeeling and were entertained. Shortly afterwards, cholera broke out among them, and every one of the eight died. It was ultimately discovered that they had fled from an infected garden in the terai. The other coolies, who had hitherto been healthy, were also infected by the new-comers.

"Garden No. 6.—Seven new coolies from an infected part of the Kursang neighborhood arrived at a hill garden on which there had been no signs of cholera. Shortly afterwards the disease broke out; and, in twenty days of June, 72 died from the disease out of a total population of 100. It is worthy of note that a few villagers living in scattered huts in the same garden, but not working as coolies, escaped entirely."

Certain enthusiastic sanitarians, especially English, encouraged by the semi-official statements of governmental character, have lately broadly asserted that cholera cannot be communicated or transmitted, but is a local disease dependent upon pollution of the atmosphere, water, or soil. Sir W. G. Hunter, in his observations in Egypt, emphasized as cause the filthy conditions found there. Miss Florence Nightingale, in a letter recently published, repeats these views, and enforces sanitary measures as our only safe-guard, stating that quarantine, isolation, and the like, by distracting the attention from such measures, may tend fatally to aggravate the disease, and she quotes Dr. Cunningham as authority.

All this must not be underestimated. The truth lies very probably in the particular cause of infection, but this seed must find a soil favorable for its growth and dissemination, and here we find abundant cause to enforce all sanitary measures, just as in the entire class of zymotic diseases.

As in consumption, we must have not only the bacillus tuberculosis, but must find conditions favorable for its development; an unhealthy mucous membrane lining the respiratory tract, its ciliated epithelium impaired, or destroyed, furnishing a soil fitted for its growth.

In the present lax condition of English surveillance of her commerce, it becomes our Government to exercise a doubly careful enforcement of our wisely framed quarantine laws, while it behooves every citizen to look especially after his own sanitary surroundings. In something of the same spirit which actuates the English government, a leading editorial in the *Boston Medical and Surgical Journal* of Oct. 9, upon "Cholera and Rags," deprecates the action of our Government, and finds fault with the order issued by our indefatigable Surgeon-General Hamilton, forbidding the importation of rags for three months. The wisdom of such an order could only be called in question by the superficial or prejudiced critic.[1]

Having given so much space to the diseases in which bacilli are believed to play an important part, we must pass over more rapidly the group of diseases in which the round cell or micrococcal growths predominate. In this group have been classed, with greater or less evidences of a causative character, cholera of fowls, pyæmia and septicæmia in rabbits, swine-plague, pleuro-pneumonia of cattle, hydrophobia, small-pox, vaccine, gonorrhœa, whooping-cough, measles, scarlet fever, diphtheria and erysipelas.

The presence of micro-organisms is easily proven in the products of diphtheria. Ten years ago I demonstrated them in diphtheritic membrane. Recklinhousen, Klebs, Eberth, and many others have discovered them in many organs and tissues. Oertel and Eberth are very sure of the causal relations of the micrococcus diphtheria. Klebs produced diphtheria in animals by the inoculation of pure cultures. None are of greater value and interest than the studies of Drs. Wood and Formad. They inoculated pure cultures in a number of instances, resulting in the death of the animal. Micrococci were abundant in all cases. Last autumn I instituted a series of cultures from a portion of tracheal membrane removed after tracheotomy. Careful microscopic examination was made at each inoculation, and the developing and the massing of the micrococci were carefully noted. Zoöglea masses were abundant in each instance. The tenth in the series covering a period of about 40 days was selected for inoculative experiments. From this six guinea-pigs were inoculated in the cornea of the eye. One died upon the second day, and three were killed on subsequent days. A membrane developed in the eye infected in all, and micrococci were numerous in each. The other two recovered with loss of the eye inoculated. During the inoculating experiments my assistant, Dr. Nelson, was infected and suffered a severe attack of diphtheria, from which he slowly recovered. Micrococci presenting the same appearance and characteristic massing were abundant in the proliferation about his tonsils. From this I reproduced in culture micrococci with the same characteristic appearance.

Fehleisen detected in several cases of erysipelas micrococci, especially in the parts and the periphery of the erysipelatous patch, at the very commencement of the process. He found them in the interstitial tissue, and also in the lymphatics, and in their neighborhood he found accumulation of leucocytes. He was able also to cultivate the organisms in a solid gelatine soil, and went on cultivating them to the twelfth and thirteenth generation. He noticed a different naked-eye appearance of the cultivated masses from that of cultivating masses of other septic micrococci. The cultivated organisms, when injected into a rabbit's ear produced, after an inocula-

[1] Space forbids any farther discussion of the cholera bacillus, but we would urge a careful study of Dr. Koch's address upon the cholera and its bacillus, delivered before the Imperial German Board of Health in Berlin, and translated and published in the *British Medical Journal*, August and September, 1884, at the close of which Prof. Virchow, after thanking Dr. Koch for giving this long and detailed account of his view, said: "I say decidedly for myself that, from the beginning, I thought it very probable that the bacillus was, indeed, the *ens morbi*; but from what I have heard to-day, my conceptions on the subject have arrived at a much greater degree of certainty."

tion period of twelve to eighteen hours, typical erysipelas, spreading to the head and the neck. In the affected parts, the micrococci were again seen. Removing the rabbit's ears twelve hours after inoculation stopped the process. Bearing in mind some well-known observations by Nélaton, Thiersch, and Volkmann, that patients suffering from malignant tumors improved, when contracting erysipelas, Fehleisen inoculated patients, some suffering from cancer of the breast, others from sarcomatous tumors, others from lupus, with the cultivated micrococci and produced, in seven out of nine inoculations, typical and in one case most severe erysipelas."

From the fluid in blisters of erysipelas patients I have cultivated and studied the micrococci very carefully. They were easily reproduced in a given series, but two or three injections and inoculative experiments failed of a development of the disease in the guinea-pig.

The relation of erysipelas to puerperal fever has long been suspected. An unfortunate series of cases occurring in the practice of a brother physician recently is worthy of notice. Three of the fatal cases I saw in consultation. Following a case of erysipelas early in January there supervened in his practice five fatal cases of puerperal fever, the last developed at about the tenth day, erysipelas following what seemed a slight abrasion in the middle line over the coccyx, up the back, and then diffusing laterally until it became general and before death had extended over quite the larger portion of the body. In bulbs infected at the bedside with secretion taken directly with much care from within the cervix uteri, micrococci were reproduced in rapid growth, and, in appearance, the micro-organisms could not be differentiated from the cultures from the blisters of erysipelas.

In the pus from gonorrhœa Neisser detected a micro-organism, a micrococcus; this he was able to cultivate and found its naked-eye appearances, as cultivated on gelatine, different from the septic micro-organism. Inoculations performed by him were not successful. Bockhardt has, however, recently repeated the experiment, cultivated the micrococci and obtained positive results or inoculations.

Dr. Queist, of Russia, reports that he has successfully cultivated vaccine virus, and that with this he has vaccinated with typical pustules and thereafter granting immunity against a second vaccination. No test has been offered as to the prevention of small-pox. He states that the micrococci developed into bacilli and these again into micrococci.

By the politeness of Dr. H. A. Martin, of Boston, we were enabled to inoculate bulbs directly from the animal serum. In these developed an abundance of micrococci single and in chains; they are very minute and active, combined in twos they resemble short bacilli and require high powers to differentiate. Our vaccine experiments, however, failed.

I would enter an earnest plea that every medical school should train a corps of competent observers, that each hospital set apart the needful appliances for the proper study of diseased tissues and secretions, and that the profession generally be requested to collect material which, in capillary tubes, enclosed in melted parafine, and other ways, may safely be transmitted by mail. By such means our present knowledge would be materially enhanced.

Although I have omitted much of real value, I believe we may conclude from this review that the time has passed when the critic of the germ-theory of disease can content himself with captious remarks "upon fashions in medicine, deluded followers of speculative theories, etc." As well might the geographer deny the existence of Africa because a topographical survey had not been made of its interior. All along the border lines of the unknown are enthusiastic explorers engaged in the difficult and dangerous work of investigation with a heroism and determined fortitude of a Livingstone or a Stanley. In these directions science is not without its martyrs. The investigations of a cholera commission in Egypt and India or yellow fever in Havana are not less dangerous than an expedition to discover the sources of the Nile or a ship's company in quest of the northwestern passage.

Let us, in common with grateful republican France, hold in loving remembrance her peasant-boy Pasteur and his school of followers; with the great and learned empire of Germany recognize in Koch and his distinguished colaborers the important discoveries already made; with England vie in doing honor to a Lister and his students who have revolutionized surgery; and shall we forget in our own country a Sternberg, a Belfield, a Formad, and many others whose work has added to our national fame? We are glad to pay tribute of loving remembrance to Johns Hopkins, the founder of a University in whose halls we are now assembled, which ennobles science; to a Senney who reaches a climax of national benevolence in founding a hospital; and last, not least, to the railroad prince of America who enlarges the boundaries of science by his magnificent gift to one of New York's most famous schools of medicine. We emphasize the ingratitude of kings and emperors as we hold up to our sons the glowing picture of a republic. As scientists, however, we must remember that we lack political potency. For us, no "Harbor and River Bill," under the flattering representation of national commercial development, carries the open sesame of patronage and votes. A National Board of Health is shorn of its usefulness and unmeasured good through ostensible motives of economy, while our millions are expended with a lavish hand to aid "the power behind the throne." Just now, the personal aggrandizement of some possible President is, in political estimation, of far greater consequence and importance than the prevention of contagious and zymotic diseases which annually carry to untimely graves their hecatombs of victims.

Let the medical profession arise to its just prerogative and power as conservator of the public health. Memorialize Congress to aid in the better solution of the important questions of preventive medicine, and the great wealthy government of the New, rival the Old World in a generous emulation in the settlement of questions fundamental to the health, happiness, and long life of her citizens.

HYDROCHLORATE OF COCAINE IN THE NOSE AND THROAT.

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PROFESSOR OF LARYNGOLOGY, RUSH MEDICAL COLLEGE.

After having noticed the statement by M. Du Cazal, that tincture of coca would relieve painful affections of the throat, I made several trials of the remedy, but failed to get satisfactory results; and since the publication of Dr. Agnew's report on the hydrochlorate of cocaine, being unable to obtain any of the latter, I have made trials of a strong solution of the extract of coca, and also of citrate of caffeine, which, from its close resemblance to cocaine, I hoped might produce similar local effects; but in both I was completely disappointed.

I was unable to obtain any of the hydrochlorate of cocaine until the 13th of this month, when I received a 2 per cent. solution from New York. My first trial was in a healthy subject, who, however, had a very sensitive Schneiderian mucous membrane. I ascertained by experiment that, with the moderate pressure applied, only about 10 per cent. of a spray applied to the nostrils would be lost. I then applied the solution in the left nasal cavity, first by a spray, and afterward by a hypodermic syringe fitted with a long probe-like nozzle. I applied in this case 26 minims of the solution during the space of forty-five minutes, from two to four minims being applied at intervals of three to six minutes, with the following result: Fourteen minutes after the first application there was a decided loss of sensibility, though pressure caused pain. In thirty minutes anæsthesia was nearly perfect, 18 minims having been used, and in forty minutes sensitiveness was returning. In forty-five minutes the membrane was quite sensitive, and in fifty minutes sensibility was almost normal, notwithstanding the continuous use of the cocaine. The soreness caused by the probing caused considerable pain, which radiated to the eyes and side of the head, and lasted for three or four hours.

Case II. Male, aged 19. Naso-pharyngeal fibroma. In this case a portion of the fibrous growth, which was attached to the side of the posterior border of the septum, had to be cauterized.

Two previous cauterizations had given the patient very severe pain, which "shot through his whole head." The nasal cavity was first washed out with Dobell's solution, and afterward with a weak solution of hydrochloric acid. It was then dried by absorbent cotton, and the two per cent. solution was applied with the syringe to the part to be cauterized.

I used 30 minims during thirty-six minutes, in quantities of four to five minims every five minutes, with the following results: In seven minutes sensitiveness was considerably diminished. In fourteen minutes sensitiveness greater than before. Thirty-six minutes after the first application, half a drachm of the two per cent. solution having been applied, he could feel the probe, but it caused no pain excepting in one spot. I then applied the cautery thoroughly about three times as long as on previous sittings, causing very little pain—he thought about one-tenth as much as formerly.

Case III. Male, aged 62. At two previous sittings I had removed from this gentleman's nares large mucous polypi, but to-day I found the base of one springing from the middle meatus of the right side. I dried the parts with cotton, and during ten minutes applied ten minims of a two per cent. solution as thoroughly as possible immediately about the polypus. Nineteen minutes after the first application, I removed the polypus with snare and forceps, and then cauterized its base with the galvano-cautery. He said the pain was very slight, not more than one-tenth what he had experienced from previous operations of the same character. He was exceedingly pleased at the result.

Case IV. Male, aged 34. Nasal polypi, with exceedingly sensitive Schneiderian mucous membrane. Applied first five minims of a two per cent. solution, five minutes later four minims more. Six minutes later parts not sensitive to probe. Cauterized base of polypus in middle meatus with galvano-cautery, with about one-fifteenth the pain he had experienced from a similar operation a week previously.

Case V. Male, aged 29. Hypertrophic catarrh. This patient came from Iowa, and as he wished to return the same evening, I desired to relieve him as completely as possible at one sitting. To the left naris, which was very sensitive when touched with the probe, the two per cent. solution was applied as in the preceding experiments in quantities of one to four minims at intervals of one to four minutes, with the following results: There was some numbness at the end of seven minutes, and very little sensitive at the end of eleven minutes, but eight minutes later, notwithstanding the continual use of the drug, the sensitiveness was about the same. I then transfixed the lower turbinated body and applied the snare without pain, though he felt it; but when the snare was tightened considerable pain was experienced. Three minutes later the sensitiveness of the part was about one-third that of the side not treated.

While doing this operation I received word that the cocaine ordered from Germany had arrived. I immediately sent for it and had a four per cent. solution made.

Second trial in Case V.—An hour and a half later I applied the four per cent. solution to the right naris. The cavity was first dried with cotton and twelve minims applied in quantities of one to two minims at intervals of two or three minutes during twenty-three minutes, at the end of which time he said the sensitiveness was more than at first, though it had been much obtunded ten minutes earlier. I then swabbed out the naris carefully and applied four minims more of the solution. Five minutes later I cauterized the inferior turbinated body thoroughly, causing about one-fourth the amount of pain ordinarily experienced from similar though much shorter operations.

Case VI. Female, aged 33. Anosmia dependent partially on submucous thickening of the upper part of the septum which was swollen so as to protrude three-

sixteenths of an inch. I first dried the mucous membrane with a jet of compressed air and then applied the four per cent. solution by means of the syringe, dropping upon the surface half a minim every half minute for three minutes, and afterward every three minutes until ten minutes had elapsed, when I found anæsthesia of the part complete. I then cauterized the swollen tissue thoroughly, passing the hot wire twice through its base without causing the slightest pain. A similar operation in the opposite naris had previously given this patient severe pain.

CASE VII. Male, aged 21. Deflection of the septum with exostosis forming a spur 1¾ inches long, projecting a fourth of an inch from the normal plane of the septum and decreasing the normal calibre of the air passage 80 per cent. The nasal mucous membrane was unusually sensitive. I applied a loose pledget of absorbent cotton below the spur, and having dried the membrane with the jet of air, repeatedly dropped upon the upper surface of the spur, from one end to the other, a four per cent. solution; averaging half a minim every half minute for the first six minutes. Some of this ran down into the cotton below the spur, but at the end of several minutes from the first application when the upper surface was completely benumbed I found the lower still acutely sensitive. I then removed the cotton and dried the passage with the air jet and applied more of the solution in the same manner as before, both above and below the spur. Twelve minutes after the first application, having used eight minims of the solution, I found the parts to be operated upon completely anæsthetized, I then sawed off the spur (this part of the operation requiring about four minutes), without causing the slightest pain. In removing the detached bone some pain was caused by touching the outer wall of the naris which I had not attempted to anæsthetize. Twenty minutes after the first application, sensibility was rapidly returning, and five minutes later the parts were again sensitive to the probe.

CASE VIII. Mrs. W. Small cystic tumor at the lower part of the left side of the base of the tongue about half an inch below the tonsil, with several diseased follicles in the tonsil filled with their desiccated secretions. I wished to destroy part of these with the galvano-cautery. But the patient so feared pain that I attempted to benumb the parts by injecting on the upper part of the tonsil the four per cent. solution, which trickled down so that I supposed the membrane over the cyst would be reached. Five minims were used in the course of five minutes, the mouth being kept open. Three minutes later the patient complained of something being lodged in her throat which made her retch and nearly caused vomiting, this sensation which was due to the benumbing effects of the cocaine, lasted about five minutes; as soon as the tendency to retch ceased I destroyed the cyst with the galvano-cautery, but the anæsthetic effect of the cocaine seemed to have entirely disappeared.

CASE IX. Male, aged 31. Hypertrophic catarrh. Dried the parts with the blast of air and then applied the four per cent. solution of hydrochlorate of cocaine to the inferior turbinated body of the right side, eleven minims in thirteen minutes, from one-half to one minim every minute.

In this case, as in others of hypertrophic catarrh, the solution caused the swelling to almost completely disappear by the time anæsthesia was complete.

The turbinated body was cauterized thoroughly without pain. The patient complained of a sense of dizziness and slight dyspnœa for ten minutes, but had no unpleasant sensations afterward.

CASE X. A little girl, aged 6. Adhesion of turbinated body to septum, causing stenosis of right naris.

Applied the solution as in the last case, excepting that half of it was used with the atomizer and only eight minims were employed.

In fourteen minutes anæsthesia was complete and the adhesions were broken down without pain.

Second application in case II. On the patient's next visit to my office I applied the four per cent. solution to the naso-pharynx, which still contained quite a large mass of the fibrous growth. He has always complained bitterly on any manipulation of the part, but after having used ten minims by the atomizer, a minim every minute, the surface was anæsthetized, however, by the probe I found that deeper parts were still sensitive.

I then introduced, by means of the probe-pointed syringe nozzle, six minims more in various places where the contact of the probe caused pain. In twenty-five minutes the parts were so thoroughly anæsthetized that I commenced the operation of removing the mass with cutting forceps. The operation lasted about ten minutes and gave no pain excepting in one small spot, though he said he felt the instrument whenever introduced or moved.

From my experience with cases, one to five inclusive, I concluded that when the solution is applied in the naris, every four or five minutes a partial anæsthesia occurs in ten or fifteen minutes after the first application, and that it is followed, like the first effects of ether when given slowly, by a period of two or three minutes of exalted sensibility, and that if its use be continued (possibly without further use) the maximum effects of the anæsthetic are quickly reached. The anæsthesia disappears in about five or ten minutes. These cases also suggest the query, whether, after a short time (thirty to forty-five minutes) it might not be very difficult to maintain anæsthesia even by repeated applications? These same cases also convinced me that a two per cent. solution is not ordinarily strong enough for use in the nose. From all the experiments, I conclude also that the drug does not act satisfactorily unless the mucous membrane is free from secretions, and wiping out the nasal cavity with cotton, though it dries it for a few seconds, excites excessive secretion directly afterward, therefore drying may be much better accomplished by the jet of air.

These cases, as far as they go, also suggest the advisability of overcoming the sensitiveness as quickly as possible by frequent applications, which keep the surface constantly bathed in the solution. When used in the fauces, it was entirely unsatisfactory in one case, but I attribute this partly to the

particular patient and partly to the imperfect application of the solution. Dr. Solis Cohen's experiments with it in the larynx have not been satisfactory, but we will doubtless soon learn how to obtain better results from its use in the fauces and larynx.

One of the remarkable properties of this drug, which I observed when I first applied it to the swollen mucous membrane of the turbinated bodies, is that of causing prompt and rigid contraction of these tissues. This action has proven to be uniform, and I have learned by experiment that the contraction may continue several hours. This property will render the cocaine almost a specific for the relief of the "stuffing up" of the nose which occurs in acute colds, hypertrophic catarrh and hay asthma, as well as for the throat deafness, which results from swelling of the mucous membrane lining the Eustachian tubes.

64 State St., Chicago, Nov. 18, 1884.

MURIATE OF COCAINE IN OPHTHALMIC PRACTICE.

BY CHAS. J. LUNDY, A.M., M.D.,

PROFESSOR OF DISEASES OF THE EYE, EAR AND THROAT IN THE MICHIGAN COLLEGE OF MEDICINE, DETROIT.[1]

MR. PRESIDENT AND GENTLEMEN:

I take the liberty of calling your attention to the new local anæsthetic, muriate of cocaine, a solution of which I here show you. The opportunity of making some remarks upon this important drug affords me much pleasure, because my former preceptor, Professor H. D. Noyes, of New York, was the first to bring it to the notice of the profession in this country. While attending the Ophthalmological Congress, in Heidelberg, in September, Professor Noyes witnessed the experiments of Dr. Koller before the meeting, and in the *Medical Record* of October 11 he relates what he observed. The news that a valuable local anæsthetic had been discovered—one which would, in many instances, obviate the necessity of administering general anæsthetics, such as chloroform, ether, etc.—naturally excited great interest, especially among ophthalmic surgeons. Indeed, medical men all over the country are using it in operations on the eye, the nose, the uterus, etc., and already many successful cases have been reported.

I have made several experiments with it, and have employed it before operating in a large number of cases.

Applied to the conjunctiva it produces anæsthesia of that tissue which is nearly, if not quite, absolute. Applied to the mucous membrane of the lip or cheek it produces a feeling of numbness which finally becomes tolerably complete anæsthesia. Employed in the nose it produces such complete anæsthesia that the actual cautery has been employed without pain. It is evident, therefore, that muriate of cocaine is capable of producing paralysis of sensation in any part of the trigeminus, the great sensory nerve of the head and face. It has been used successfully in operations on the uterus, and it is but fair to presume that it will temporarily paralyze sensation in any part of the human economy. This, however, has been denied, and some experimenters claim that it does not affect the iris. In this latter view I do not concur. It paralyzes the ophthalmic division of the fifth very generally, and it is not at all probable that it would exert a paralyzing influence over one part of a nerve and not over all of it. The ciliary nerves supplying the iris with motion and sensation contain branches derived from the ophthalmic division of the fifth, with branches from the third and from the sympathetic. Now that muriate of cocaine does affect the iris we have positive proof, for it produces partial paralysis (as we shall see) of the sphincter of the pupil. If it paralyses sensation in other parts of the ciliary nerves, and produces motor paralysis of the iris, it seems impossible that the iris should escape its anæsthetic influence. Indeed my observations and experiments lead me to believe that if a sufficiently strong solution of the muriate of cocaine be employed, the iris also loses its sensibility for a time. I can readily understand that it will be much more difficult to produce paralysis of sensation in the iris than elsewhere, for the aqueous humor which bathes the iris dilutes the medicine which passes into the anterior chamber by endosmosis. Could the anæsthetic come directly in contact with the iris there can be no doubt that tolerably complete anæsthesia would follow.

In eye operations I now employ a four per cent. solution of the muriate. Of this I instil into the eye two drops every three or four minutes, until eight drops are used. From its use in this manner I have observed the following effects: The cornea begins to lose its sensibility in three or four minutes, and in many cases the corneal anæsthesia is complete in five minutes, while in other cases it requires eight or ten minutes to produce this result. In one patient, who had an irritable, painful ulcer of the cornea, all pain was relieved in less than five minutes, and a few minutes later the ulcer was touched with a sharp instrument without producing the slightest sensation. The conjunctiva loses its sensibility in six to ten minutes, and can be firmly grasped by a fixation forceps without the knowledge of the patient. The anæsthesia of the cornea and conjunctiva lasts from twenty to thirty minutes, after which normal sensation is soon restored.

Its action on the pupil and on the muscle of accommodation (ciliary muscle) was observed as follows: In five or six minutes the pupil began to dilate. The dilatation increased slowly for fifteen or twenty minutes, at which time the pupil was twice the normal size. In no case did I observe that the pupil was dilated *ad maximum*. The dilatation of the pupil lasts from twelve to twenty hours, according to the quantity and strength of the solution employed. At no time was the pupil wholly irresponsive to light. In twelve to fifteen minutes I observed the first signs of failure in the power of accommodation. In twenty minutes the effect on the ciliary muscle was tolerably

[1] A paper read before the Wayne County (Mich.) Medical Society.

well marked, and print which, before the use of the medicine, could be seen at five or six inches, could not now be seen nearer than twelve to fourteen inches. Repeated attempts to fully dilate the pupil, and render it wholly irresponsive to light, were not successful in my hands. Neither did I succeed in producing anything like complete paralysis of accommodation.

From these experiments it will be seen that muriate of cocaine not only produces tolerably complete paralysis of sensation, but that it is also capable of producing partial paralysis of motion. However, the drug seems to exert slight influence over motion as compared with its influence over sensation.

It was observed that slight hyperæmia of the parts followed its use in all cases. It was also observed that the parts bled more freely than is usual when incisions were made. This would indicate that it exerts at least some paralyzing influence over the vaso-motor nerves. However, the bleeding in such cases was by no means so free as to indicate anything like complete vaso-motor paralysis. I should be inclined to believe that its influence over the vaso-motor nerves was, like that over motion, rather slight.

In operations I have employed it in extraction of cataract, in enucleation, in strabotomy, in paracentesis of the cornea, in the removal of tarsal tumors, in canthoplasty, in lachrymal operations, etc. In one extremely nervous, timid boy a little chloroform was administered, but not on account of pain.

In one case of enucleation the operation was almost complete before the patient gave any evidence of feeling pain. Then a little chloroform was given and the operation completed. This was in a bad subject for an anæsthetic, and the risk of complete anæsthesia from chloroform was avoided. I am confident that a less nervous patient would have gone entirely through the operation without requiring any general anæsthetic like chloroform. In an operation for cataract the patient said he felt no pain whatever, and was cognizant of any operation only by feeling a pressure upon the ball—possibly the pressure of the shell scoop in stroking the cornea in delivering the lens. In operations on the lachrymal apparatus, Bowman's operation was done with very slight pain. In one case the slitting of the nasal duct produced as much suffering as usual. Where I succeeded in getting any of the medicine through the duct into the nose, the passage of the knife produced but little discomfort. In one very nervous subject who fainted away during a previous operation for tarsal tumor, no pain was felt in a similar operation after the cocaine had been used. Patients upon whom I operated for strabismus say they experience a sensation of drawing or pulling when the muscle is raised upon the strabismus hook.

In my experiments upon the skin the results were not entirely satisfactory. In some cases the sensibility of the skin was perceptibly diminished, while in other cases it seemed to produce little or no effect. It is probable that to produce anæsthesia for general operations in surgery, it will be necessary to inject the cocaine hypodermically.

Just what will be the range of usefulness of muriate of cocaine, we cannot now say positively, but from present indications it seems that it is destined to fill an important place in our armamentarium. Should there be no dark side to the picture which now seems so bright, great things may be expected from this new drug, which is now attracting such universal attention. Many exaggerated statements will undoubtedly be made regarding it, and it will be some time ere we will be able to correctly estimate its real value.

MEDICAL PROGRESS.

SURGERY.

GASTROSTOMY FOR STRICTURE OF THE ŒSOPHAGUS.—Mr. John Fagan (*British Medical Journal*) narrated before the British Medical Association the leading features in the histories of two cases of stricture of the œsophagus; the first was in a man 46 years of age, on whom the catheter was passed until it would no longer penetrate the stricture. An opening into the stomach was made, after which the patient lived for three weeks, with very little improvement, dying suddenly from collapse. The union between the stomach and abdominal walls was complete, except at one point at the upper angle, where the attachment gave way. As the patient died suddenly after being fed, it is more than likely that some fluid passed into his peritoneal cavity. In the second case the patient died thirty-six hours after the operation. Mr. Fagan suggests the following rules regarding the performance of the operation of gastrostomy:

1. In cases where the obstruction is partial, it should not be entertained in non-malignant cases so long as a bougie can be passed, or a tube worn to enable the patient to take sufficient nutriment. But should the passing or wearing of an instrument cause great irritation, while the difficulty in overcoming the obstruction is increasing, the operation may with justice be undertaken. For by it the affected parts are placed in a state of physiological rest, which tends not alone to the improvement of the part, but renders it more amenable to other forms of treatment.

2. In cases due to malignant obstruction, where the dysphagia is becoming both painful and more marked if the permanent wearing of a tube cannot be tolerated, there should be no time lost in performing a gastrostomy.

3. In cases where complete obstruction has existed for a short time, the patient's strength being fairly sustained by enemata, and there is no malignancy, the operation may be undertaken with hopes of improvement; in malignant cases, at this stage, it should not be urged.

4. In the advanced stage of complete obstruction, no matter what the cause be, the operation should not be undertaken, for the patient, if he survive the immediate shock from it, cannot live more than a few days, that are passed in increased discomfort.

Regarding the mode of performing the operation,

Mr. Fagan does not think it makes much difference how the incision is made, provided it is just large enough, and so placed as to allow of the stomach being seized and easily drawn through the wound.

Theoretically, an improvised sphincter to guard the fistulous opening is a very desirable thing; but if the vertical incision renders the operation more tedious or difficult, it is questionable if the practical advantages supposed to be gained by it will make up for that. The usual incision is the oblique, commencing a little below, and to the left side of, the tip of the ensiform cartilage. By this the stomach is best exposed and most easily secured. Here the mistake is generally made of placing the line of incision too near the border of the costal cartilages. The finger's breadth that is usually recommended looks, before operation, just sufficient for the purpose; but after the incision is made the upper flap is retracted and gets tucked up close to the ribs, rendering it impossible to pass the outer ring of sutures. The incision should be begun about an inch below the tip of the ensiform cartilage, a little to the left of the median line, and extended obliquely downwards and outwards, keeping at least fully two inches from the border of the costal cartilages.

The ordinary method of attaching the stomach to the abdominal wall by a single ring of sutures, although simple and expeditious, is not a secure one. Professor Ditch, of Vienna, after incising the abdominal wall, attaches the parietal peritonæum to the skin by numerous points of fine suture. By means of a stout curved needle in a needle-holder, he passes a circle of sutures, forming broad loops, through the outer circle of the stomach, and then through the whole thickness of the abdominal wall, about half an inch from the edge of the incision. By this means he brings a broad band of visceral and parietal peritonæum in contact. Between the large sutures he passes a number of fine ones, and in this way secures a close attachment of the stomach to the abdominal wall; this completely occludes the peritoneal cavity, and removes any risk of the passage of fluid into it.

To establish immediately a fistulous opening in the stomach, a suture armed at one end with a curved needle, at the other with a straight one, should be used, the curved one should be passed by means of a needle-holder through the outer coats of the stomach, and then through the abdominal wall, about an inch from the edge of the wound; the straight through the wall nearer the incision; and the suture then tied in the usual manner over some suitable resisting medium. In forming the fistulous opening Mr. Fagan, after his incision, introduces two ordinary silver probes bent at right angles about an inch from the point, and pulls with them at right angles to the muscular fibres of the stomach, until a No. 9 catheter passes in readily. After the catheter is withdrawn the opening is closed, and no regurgitation occurs.

In malignant cases he would complete the operation at once, in non-malignant, and in the very early stages of malignant obstruction, Howse's method of dividing the operation into two stages is the more preferable, as by it a more permanent and accurate attachment is more likely to be secured all round the fistula; besides the patient is in a better condition to be subjected to such treatment.

Mr. Macnamara also reported a case of a woman, 57 years of age, where, after the usual incision of the abdomen, a fold of the stomach was drawn out through the wound, transfixed by a needle and thick silver wire, and so secured to the skin as to remain outside of the wound. On the seventh day after the operation, an opening was made through this fold of the stomach, sufficiently large to admit of the passage of a No. 7 catheter. At the end of a month she was able to get up and move about the ward, a small fistulous opening remaining, through which she was able to inject her food by means of a properly fitted tube. She passed natural motions and her health had much improved.

In the discussion which ensued Dr. Edwyn Andrew said that as the colon had been opened by good operators, instead of the stomach, he would mention a very ready test; that was that the external coats were much thicker over the stomach, and might be readily pinched up by the finger and thumb; so that, if they were once felt in the dead body, this mistake could not occur.

Trephining in Mastoid and Tympanic Disease.—Dr. W. S. Wheeler, in the Dublin *Journal of Medical Science*, records the particulars of three cases of this treatment with successful results. He gives seven different ways in which suppurative inflammation of the dura mater follows carious disease of the osseous structures, petrous portion of the tympanum, cavity of the labyrinth (carious disease of), and the wall of the external auditory meatus, etc.

1. Through the internal auditory meatus, in which are prolongations of the membranes.
2. Through the hiatus fallopii.
3. Through the aqueduct of the vestibule.
4. Through the tegmen tympani, always thin in the normal state and sometimes deficient over a limited area, so as to place the lining membrane of the tympanum in direct contact with the dura mater.
5. Through the fissura petro-squamosa the dura mater sometimes sending in a vascular process its entire length into the tympanum and mastoid apophysis, and by means of which the central envelope is placed, with regard to its nutrition, in more intimate relation with the middle ear.
6. Occasionally by means of a slit for the dura mater, situated between the epiotic and opisthotic elements, near the aqueduct of the vestibule.
7. Through the canals of Verga and vascular canals of Maas; the latter are behind the superior semicircular canals, and connect the middle ear with the middle cranial fossa.

The record of the results of this operation show that it is a fairly successful one; and, on the other hand, that, from the expectant treatment in suppurative inflammation, there is little to look forward to but a fatal result. Ninety-eight cases of perforation of the mastoid process have been collected by Poinsot (Dict. Méd. et Chirurg.), in 35 of which the trephine or trepan was used; in the remainder other instruments—gouge, drill, trocar, etc., were employed.

Of the total number of cases, 15 terminated fatally; in 2 the result is not stated; in 5 there was no recorded result; 5 others were under treatment at the time at which their cases were reported; the rest were successful. Of the 35 cases in which the trephine or trepan was used, 4 terminated fatally; in the total number of cases, the results of which are differently specified, 17 per cent. were fatal, and 21 per cent. successful. Buck (of New York) has collected 37 cases of suppurative inflammation in which the cases were left to nature (expectant treatment); 34 were fatal.

That the operation should be practised early is a self-evident fact; it is useless when pyæmia, meningitis, or phlebitis of the sinuses have appeared, although the first cerebral manifestations should not intimidate the surgeon from operating. Setons and issues are of little use. A well-accomplished operation will always give free vent to pus when existing, and prevent its passing to the brain through some of the numerous channels as recorded, and will thus save the patient. Dr. Wheeler deprecates the use of the gouge and galvano-cautery over the mastoid process, such a process being likely to set up irritation and inflammation. Unless the suppuration is comparatively superficial, he would not operate over the mastoid process, where one cannot remove the entire portion of the bone, on account of the proximity of the lateral sinus, and so cannot expose the dura mater, which is very essential. The site selected for operation should be such as to place the lower border of the trephine on a level with the external auditory meatus, and anterior to a line dividing vertically the mastoid process. By adopting this course, there will be no danger of wounding the lateral sinus, the tympanum and mastoid cells will be opened, giving full exit for discharge, the dura mater will be exposed, and should pus exist between it and the cranium, there will be ample freedom for its escape.

OPENING OF GALL BLADDER AND EXTRACTION OF BILIARY CALCULI.—Dr. Langenbusch, of Berlin (*Independence Belge, Midland Med. Miscellany*), has recently performed this operation upon M. Eugene Anspach, the Deputy-Governor of the National Bank of Belgium, who has been for many years suffering from a collection of gall stones, which have kept him in a state of aggravated suffering, and have latterly defied all measures of relief. M. Langenbusch, summoned specially from Berlin, proposed to lay open the gall bladder, with antiseptic precautions, admitting, however, that he had only performed this operation four times, and that but one of these cases recovered. M. Anspach's family and friends were much dismayed at this announcement, and begged that the operation should not be performed. M. Anspach was firm, and reflecting that without it he would not live long, and that in the mean time his life would be worse than death, decided on the operation. Even at this supreme moment the banking mind asserted itself, and M. Anspach remarked: "After all, one in four is 25 per cent., and that is a fine dividend." "You have had one recovery already, doctor," he remarked, "and I will be the second," an element of confidence which no doubt had something to do with the result. The operation was performed on the 9th of September, and 125 calculi were extracted from the gall bladder. M. Anspach suffered a good deal, but is now out of danger and in complete comfort.

MEDICINE.

INTESTINAL INTUSSUSCEPTION.—Mr. A. K. Young, (*British Medical Journal*), reported a case of intestinal intussusception to the British Medical Association, in which there had been no evacuation from the bowel for two weeks, large enemata of soap and water, castor oil, and opium failing to produce any effect. Mr. Young connected the long enema tube to a strong elastic one coming from the waste cock of the water tank on the roof of the house about 30 feet above the patient. The tank-water was agreeably tepid from the rays of the very hot sun to which it lay exposed. The enema tube was passed into the rectum as high as it could be without violence, and this very enormous and steady pressure was sustained for five minutes without the slightest effect. This was repeated on the following day and accompanied with kneading, and was repeated a third time without effect. The belly was swollen but no especial discomfort was felt.

Mr. Young next proceeded to introduce mercury into the stomach, through a tube by means of a glass funnel, first using two pounds of the quicksilver and four hours later, one pound and two drachms —making in all three pounds and two drachms of the metal. From the record, although aided by succeeding enemata of oleaginous substances, this remained in him, producing pain and vomiting, until the third day thereafter, when the man left the hospital to die at home, and drove six or seven miles in a cart over a rough mountain road. On the fifth day he had two evacuations containing quicksilver, which from that time on gradually forced its way out, *i. e.*, during the succeeding nine days. Neither during the time the mercury was blocked up in the abdomen, nor at any time after its discharge, were there any symptoms, constitutional or local, to indicate its presence.

Mr. Young justifies his treatment by stating that he desired to give a sufficiency of quicksilver to liberate by its weight the strangulated part. In general terms, we may look upon the containing and contained portions as forming a bag, the floor of which is formed by the narrowed descending bowel, and the sides of the bag by that portion of intestine immediately above and continuous with it. The exterior descending portion is reflected from the lowest part of the strangulated gut, and upwards external to it as far as the upper part of the strangulation, then turns downwards on itself externally, and is continuous with that which is below the strictured part. In all these reflections, the serous membranes are opposed to and in contact with each other. When the upper portion descends and is strangulated, at that point of strangulation the bottom of the bag is formed with the aid of the up-

per portion which descends to the stricture, and is capable of containing more or less of whatever falls into it. If we could take this part of the bag immediately above the strictured point, and pull it upwards, or distend it laterally, the strictured part would be pulled upwards or outwards by the distension, the lymphy attachments of the opposing serous surfaces would yield, and ultimately the strictured portion would be raised out of its narrowed bed, and the bowel set free. By introducing into this bag a considerable weight of mercury the sides of the bag would be distended by the heavy and movable medium, every movement of the body would keep this in continual motion, and as this pouch was thus increased, and the weighty mercury constantly exerting pressure and a dragging, now on this side, now on that, and more and more still as it became more and more distended, and the tendency of all this to pull at the upper descending part of the intestine, and drag it over the reflected brim of the detained gut, the end in view might ultimately be attained.

That there was a true invagination there can be no doubt; the different discharges at uncertain times, with varying quantities of the metal, until the channel of the intestine became sufficiently open, and then followed by the enormous discharges, from the doughy beds of retained fæces, the perfect health the man enjoyed for weeks, the recurrence of his symptoms excited by violent exertion, and the perfect occlusion of the bowel until he died, all prove this to be intussusception.

Case of Lipoma of the Arachnoid.—Dr. Braubach (Arch. für Psych. und Nervenkrankheiten) records a case of lipoma of the arachnoid of the cervical cord, and extending to the point of exit of the fourth and fifth dorsal nerves. The cord was completely compressed and displaced to the left side. Below the region of compression there was descending degeneration of the pyramidal columns.

The nature of the tumor is very rare in this situation. Very few such cases have been recorded: one by Abré, one by Athol Johnson, one by Virchow, and a case of myo-lipoma by Gowers. The paraplegia of the lower limbs, their extreme anæsthesia, the bladder weakness, the extreme contraction of both lower extremities, the increase of their tendon reflexes, need no comment. They depend partly on the compression of the cervico-dorsal cord, partly on the descending secondary degeneration of the lateral pyramidal tracts.

Of greater interest is—

1. The fact that, in spite of the extreme compression and degeneration of the affected part of the cervico-dorsal cord, the conduction through it, at any rate of intense impressions of pain, was still retained.

2. The fact that, in spite of the great degeneration of the compressed parts, the roots on the right side that came off from these affected regions showed only very slight degeneration, the roots on the left side none.

3. The fact that the left upper extremity could be moved as in health, without any paralysis or contraction; whilst the right arm was paralyzed and extremely contracted. The latter symptom was, doubtless, due to the great amount of stretching of the right spinal roots, in consequence of the displacement of the cord to the left; and a permanent state of irritation was present throughout, which gave occasion to tonic contraction of the right upper extremity.—Bristol *M. C. Jour.*

MATERIA MEDICA AND THERAPEUTICS.

On the Use of Chlorate of Potash in Burns and Scalds.—Dr. J. Walton Browne (*British Medical Journal*) recommends the use of a solution of chlorate of potash in burns and scalds as of the first importance. In the treatment of burns and scalds of the second and third degree the lotion is especially useful; in many of these cases perfect healing has taken place in four to five days. In severe burns of the fourth or fifth degree it is also useful, seeming to favor the formation of granulations after the separation of the sloughs, and certainly no other remedy so thoroughly keeps the wounds clean and sweet. In superficial forms, after a few applications, a zone of new skin appears at the margins of the broken surface, and proceeds towards the centre until healing is perfect. It is quite common to see a border of newly-formed cuticle in the short space of twenty-four hours. The method he adopts is as follows:

In superficial burns he directs the blisters to be punctured, and a bread-and-water poultice to be applied over all the injured surface every fourth hour, until the cuticle has been detached; this is generally accomplished upon the removal of the second poultice. Then pieces of lint of the required size, saturated with the solution of chlorate of potash, five grains to the ounce, are applied four times a day. The lint is covered over with gutta-percha tissue or oiled silk; all dressings being retained *in situ* by a bandage. The lotion must not be of greater strength than five grains to the ounce; of this strength it acts as a sedative, although at the same time stimulating the capillaries to the formation of new skin. If applied much stronger it causes pain—in fact, it acts as a caustic. In some cases, where the lint occasionally adheres to the wound, and is difficult of removal without injuring the capillaries and causing bleeding, Dr. Browne adds to the chlorate of potash solution some glycerine, in the proportion of two ounces to the pint.

In the treatment of very deep burns he advises the application of poultices until all sloughs are separated. Granulations then spring up, and nothing seems to increase their activity and vitality equal to the potash solution, of the strength of five grains to the ounce. Should the granulations become weak, flabby, or too exuberant, we then use a potash lotion of the strength of ten grains to the ounce, and at the same time prescribe a mixture of chlorate of potash and tincture of perchloride of iron to be taken three times a day. At any time, should there be offensive discharges, one can combine the potash solution with some permanganate of potash.

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PUBLISHED WEEKLY.

THE EDITOR of this JOURNAL would be glad to receive any items of general interest in regard to local events, or matters that it is desirable to call to the attention of the profession. Letters written for publication or containing items of information, should be accompanied by the writer's full name and address, although not necessarily to be published. All communications in regard to editorial work should be addressed to the Editor.

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SATURDAY, NOVEMBER 22, 1884.

DIAGNOSIS OF DILATATION OF THE STOMACH.—In Vol. 3, No. 9, of this JOURNAL we called attention to M. Bouchard's paper upon this disease, as presenting some novel points of interest. He, it will be remembered, diagnosticates ectasis of the stomach by the presence of the succussion sound below an imaginary line, connecting the ubilicus with the last rib of the left side. Du Jardin-Beaumetz objected to this as unreliable.

It is interesting and instructive to see what other French and German authors regard as the chief diagnostic feature of this disease. Dr. Enrique de Argaez, in a recent monograph on "Adynamic Dilatation of the Stomach," (The *Medical Record*, Oct. 18, 1884) states that in typical cases he has observed a prominence of the epigastrium, and, more rarely, seen the peristaltic movements of the stomach through the abdominal parietes. Palpation generally yields the splashing sound, characteristic of the presence of gas and liquid in the organ; but the actual dimensions of the dilated stomach can only be determined by percussion. M. Germain Sée who was on service in the Hôtel-Dieu where de Argaez observed his cases, considers the existence of ectasis of the stomach proved, if gastric resonance extends more than twelve or fifteen centimetres beyond the line of the left nipple, or, if a succussion sound can be obtained six hours after eating.

Doubtless the most accurate method of determining the size of the stomach is by percussion, the low-pitched tympanitic resonance, elicited over the organ, being readily recognized when heard alone and unmixed. If the stomach contains liquid, or if the intestines be strongly distended with flatus, or if there exists enlargement of the liver or spleen, the characteristic gastric resonance is masked, and it becomes impossible to outline the organ. Moreover, the position of the patient's body is of influence, and hence a diagnosis should only be attempted in the dorsal *decubitus*. Even under the most favorable conditions, it may be doubted if a diagnosis by this means is possible, unless the degree of ectasis be considerable. Roughly speaking, the normal situation of the stomach is between the median line and left hypochondrium, and the area of gastric tympany extends but a hand's breadth to the left,—to the lower curving border of the ribs downward and outward, while according to Lichtenstern its upper boundary is on the sixth rib, just below the cardiac impulse, at the apex of the angle formed by the liver and lung. This point is where the stomach most nearly approaches the anterior wall of the trunk and corresponds to its uppermost limit.

Lichtenstern was in the habit of percussing the abdomen by means of a pleximeter, and was thereby able to bring out a note of metallic quality, known in German as "*Metallklang*." He even went so far as to state that in several instances, in consequence of rapid peristaltic contractions of the stomach, he has recognized a scale of metallic notes of different pitch. This, however, is a refinement of diagnostic skill beyond the attainment of most practitioners. As a rule the general practitioner of medicine will have to content himself with his ability to detect the extremer degrees of gastric dilatation. W. P. H. Wagner, who has investigated the boundaries of the organ in question by Frerich's method of distending it with carbonic acid, states that during such temporary dilatation the left border of the great curvature reaches close to the left anterior axillary line, while a portion (one-seventh) of the lesser curvature passes beyond the median line to the right, thus leaving six-sevenths lying toward the left hypochondrium. Gerhardt ("Auscultation and Percussion," Tübingen, 1876) considers the diagnosis of this condition in most cases a difficult task, but rendered quite certain if gastric resonance can be elicited below the umbilicus, and to the right of the median line. Valuable aids to diagnosis are epigastric bulging, visible peristalsis of the organ, succussion sound, dyspeptic symptoms, etc. Gerhardt also says the pressure of adjacent organs does not displace, but only alters the shape of the stomach. Hence, percussion, by detecting the characteristic note of the stomach at some point outside of its normal limits, ought to afford the surest means now at command of an accurate diag-

nosis. According to Dr. de Argaez the diseases from which this condition of adynamic dilatation is to be differentiated, are gastalgia, gastric ulcer, chronic gastritis of alcoholism, fibrous stenosis of the pylorus, and carcinoma. In many respects the symptoms are similar, but in all cases the distinction turns on the discovery of ectasis in the way already detailed.

STATE BOARDS OF MEDICAL EXAMINERS.—A few weeks since we received from a member of the Ohio State Medical Society a copy of a proposed law for establishing a State Board of Medical Examiners in that State, accompanied by the request that we would publish the same and commend or criticise its provisions, as we might deem proper.

Accordingly we published the proposed law in full, under the head of State Medicine, in the number of the JOURNAL for November 1, 1884, and accompanied it by a short editorial in the same number, not criticising in detail the provisions of the act, but simply alluding to the difficulty of framing such laws in a way to accomplish practically the objects for which they are designed, and stating in general terms the principles on which they should be based and the essential provisions they should contain, leaving it for each reader to see wherein the provisions of the proposed Ohio law differed from what we deemed the proper ideal. For this we speedily received a sharply deprecatory letter from the learned Secretary of the State Board of Health of West Virginia, which we give our readers in full under the head of State Medicine, in this number of the JOURNAL. It will be seen that our correspondent has based his whole letter on the assumption that in our editorial we had opposed the establishment of State Boards of Medical Examiners altogether, and has therefore been deprecating the work of an enemy existing only in his own imagination. We commenced advocating the entire separation of the business of teaching medicine from the authority to grant licenses to practice and the establishment of State Boards of Medical Examiners, together with the adoption of a fair standard of general education before permitting the student to enter upon the study of medicine, before our correspondent was old enough to know the members of one profession from another. And we have continued to advocate the same on all suitable occasions from that time to the present. And in the editorial which our correspondent so much deprecates, we stated clearly the grounds on which the enactment of such laws could be justified, and the essential provisions they should contain. And if our correspondent or the readers of the JOURNAL desire to examine our views on the whole subject of medical legislation, it is only necessary for them to turn to the address we delivered before the Association of American Medical Editors, at the meeting in Cleveland, June, 1883, which was published in full in Vol. 1, No. 2, of this journal. The proposed law for Ohio is in many of its features a good law. It is better in some respects than the law regulating the practice of medicine in Illinois, to the practical operation of which great benefits have been ascribed. Consequently, if the friends of medical legislation for securing a higher standard of education and usefulness for the profession in Ohio cannot agree upon certain alterations and additions, we would strongly urge its adoption by the Legislature as it is, trusting to the wisdom of future Legislatures for the removal of its defects. But we would much prefer that the first section of the proposed law should be amended by striking out the proviso, constituting the last three lines of the section. And from the second section we would strike out all after the word Governor. We can see no possible good to result from incorporating into legislative acts a recognition of any so-called "systems of medical practice."

The only legitimate object of such a law is to secure to the people the services of medical men or doctors, of thorough education and fair practical skill. Consequently neither in the selection of members of Examining Boards, nor in the methods of examination, should the law recognize, or attempt to make, any distinction regarding systems, sects, pathies, or isms in medicine. The appointing power should only be restricted in the selection of members of the Examining Boards to such members of the medical profession, as had themselves, received a thorough general and professional education, had been actually engaged in practice in the State not less than ten years, and had acquired a good moral and professional reputation. There should be no such distinction in the examination of candidates by the Board, as is made in Section six of the proposed law. The sole object of the examination is to determine the extent of the candidate's knowledge of the various branches of medical science and art, and of all the branches included in the list, none are of so much direct importance to the sick as those called, Principles and Practice of Medicine and Therapeutics. Consequently, instead of inquiring as to what theory or pretended system of practice, the candidate intended to adopt and shaping his examination accordingly, the Board should preserve the same uniformity and impartiality in the examination on these

as on all other branches. Indeed, the examination on these important branches should be so broad and thorough in all their ramifications, as to show the candidate to be possessed of sufficient knowledge of diseases and medicines to make him a reasonably safe practitioner under any supposed system of practice; then simply license him to practice medicine, in its broad and unqualified sense.

Section 8, of the proposed law, should be amended by striking out all after the words "of good moral character," and inserting in its place the following: "and has devoted three years to the study of medicine, including human anatomy, histology, physiology, chemistry, general and medical, materia medica, therapeutics, general pathology and pathological anatomy, hygiene and sanitation, medical jurisprudence, practice of medicine, surgery, obstetrics and diseases of women (the three latter including all the specialties carved from them), with clinical medicine and surgery in hospitals containing not less than fifty beds and an average attendance of not less than thirty patients; at least six months of each year having been spent in direct attendance on some legally established medical college having the necessary facilities for instruction in all the departments named, including laboratories for practical anatomy, chemis try, and microscopy."

Such a provision in the law, at once, defines what constitutes the necessary field of medical study for the guidance alike of the student, the college, and the Examining Board, and places the main condition for admission to an examination, not on the possession of a diploma from some supposed reputable medical college, but on proofs of having actually devoted at least three years to the study of medicine, in institutions having the necessary facilities for imparting instruction, both theoretical and practical.

This relieves the Examining Board from the delicate and doubtful work of legislating or making rules as to what shall constitute a reputable medical college, and strengthens its appropriate executive function in exacting the positive requirements of the law. It would relieve the student from the pernicious question as to where he could get a college diploma the easiest and cheapest that would admit him to an examination or a license by the State Board, and confront him with the positive necessity of studying medicine at least the minimum of time necessary, and in the institutions capable of giving him the necessary facilities for prosecuting his important work.

It would also strongly discourage the multiplication of medical colleges in every town where six or seven ambitious members of the profession might desire to form a joint stock company, incorporate themselves under some general incorporation law, and thereby establish a so-called "legal medical college," whether they had at command any facilities for either clinical or laboratory work, or not.

If our much aggrieved correspondent in West Virginia will stop long enough to examine the bearing of the suggestions we have made, we think he will be constrained to admit, that the adoption of the amendments we have proposed would add very much to the practical value and efficiency of the law proposed for the great State of Ohio.

We do not think the condition of the profession in that State is so desperately bad that it is necessary to enact at once a very imperfect law, when further temperate, candid discussion might result in framing a much better one. It must be remembered, however, that our suggestions are not made for the purpose of opposing the enactment of any particular law in Ohio or elsewhere, but rather to direct attention to the correct principles on which all such legislation should be founded.

NO CURE NO PAY—A JUST DECISION.—The *Evening Star*, of Washington, D. C., dated Oct. 24, 1884, gives the result of a case in the Circuit Court of that district, which had been brought there on appeal from a Justice's Court, against a medical pretender of that city by the name of W. H. Hale, who publishes a paper or circular called "Health and Home." The doctor had received from a colored man named Meredith $100, on a written agreement to cure the son of the latter, sick with consumption, or refund the money. In due time the son died, and Mr. Meredith brought suit in a Justice's Court to recover the money. The suit was twice tried before the Justice, and both times judgment was rendered against the Doctor for the sum which he had received. An appeal was taken to the Circuit Court, Judge Hagner presiding. After hearing the evidence on both sides, and examining the written agreement, the Judge promptly affirmed the judgment obtained against the Doctor in the court below.

CHOLERA.—During the past week the cholera epidemic has continued in Paris, but with some diminution in the number and severity of the attacks. Dispatches from Paris of the 17th and 18th of November, indicate an average of about forty deaths per day.

DR. DONALD MCLEAN'S case of nephrectomy and double ovariotomy, to which we alluded last week, has continued to progress favorably and is now considered convalescent. A full history of the case is promised for the JOURNAL in due time.

SOCIETY PROCEEDINGS.

CHICAGO MEDICAL SOCIETY.

Regular semi-monthly meeting of November 10, 1884.

A large attendance of members and visitors were present.

The following recent cases in the surgical practice of Dr. Edmund Andrews are of interest, because of the numerous unsettled questions which cluster around the operations referred to:

The first two cases instanced, viz: gastrostomy, which by way of preface was stated by the author to be a barbarous word—an etymological blunder so far as literary usages are concerned, composed partly of Greek and partly of Latin. The "philological monstrosity" being apparently an attempt by its author to enlarge the word gastrotomy, which literally signifies stomach-cutting, and by the addition of a syllable to signify a mouth, so as to make the compound mean a cutting of the stomach to make a mouth—literally a stomach-mouth-cutting. The writer dilated further upon the word relative to its derivation, meaning, etc., and closed by saying that the word should be gastrostomaty, and even then there would be nothing left in the compound to signify the cutting; therefore to express the full meaning of stomach-mouth-cutting would require the form gastro-stomatomy, a term whose length and harshness of sound is sufficient for its condemnation. Suffice it to say, euphony in sound and scholarly composition, are two important requisites which are often ignored by skilled surgical authors as well as by those of pedantic pretensions. The following is a brief synopsis of the balance of the paper:

Case I. was a little girl, aged six years, who swallowed some concentrated lye several months previously, cauterizing the lower part of the œsophagus and gradually inducing a stricture. Dr. E. P. Cook, of Mendota, Ill., dilated the stricture, after which the child was sent home greatly improved. After leaving his care she relapsed. She was then placed in care of the writer. Upon her arrival it was ascertained that she had been unable to swallow anything for a number of days. Dilatation was essayed, and the patient improved for a time, regaining a partial power of swallowing liquid food. However, it was soon preceived that the advantage thus gained could not be maintained, and after faithful trial it became evident that the little one was gradually starving. So-called gastrostomy was then performed [The surgeon insisted, however, in his remarks that gastrotomy is the more scholarly term.—Ed.] in a room which had been sprayed for an hour with carbolic acid, but the spray was not permitted to touch the peritonæum. The usual incision was made in the hypochondrium from the xiphoid cartilage downward and to the patient's left. The colon was found partly in the way, but it was easily pushed downward. The stomach was then drawn out with long-toothed forceps, the viscus was identified by the relations of the gastro-epiploica vein, and secured to the abdominal wall by a long suture on each side. As starvation was feared, the stomach was opened at once, and its edges sewed closely to the skin all around the incision. There was a good deal of shock, but reaction occurred and union by first intention followed without difficulty and with no peritonitis. Peptonized food was regularly inserted, and on inspection was found perfectly digested, except when meat was used. This, whether raw or cooked, would be ejected from the wound unchanged even when retained 24 hours. For some days the patient improved, but it soon became evident that most of the food though digested did not pass through the pylorus. It seemed that this orifice of the stomach required a little pressure to unfold it, and that whenever the stomach contracted for the purpose, the chyme escaped by the fistula into the dressings, and did not pass on into the intestines. A rubber pad tight enough to stop the outflow could not be tolerated. A soft rubber tube with a flange and valve was substituted, in which the inner disc could be adjusted to the inner wall of the stomach. Then by clamping the tube outside of the outer disc to the wall of the abdomen a perfect valve was obtained, which prevented leakage. The effect of the inner disc on the walls of the stomach was feared at first, but it produced no perceptible irritation. The opening in the stomach was purposely made pretty large, the surgeon hoping at a future time to introduce a finger upward into the lower end of the œsophagus, and then by pushing down upon it, would succeed in restoring the natural passage. As above stated, the valve retained the food perfectly, and the patient took an abundance, and even learned to know when she was hungry and to call for her meals. The improvement was but temporary, however, and she began slowly to fail without obvious cause. The power of assimilation seemed to exhaust itself, and she constantly grew weaker. At the 35th day after the operation, it became evident that she was at about the end of her life. The last 24 hours were accompanied by an obscure fever.

Case II.—An adult male patient. Six months ago he swallowed some caustic ammonia, producing a contracting ulcer of the lower part of the œsophagus. In September last he placed himself in the care of the writer, having been unable to swallow anything for some days. By a persistent use of bougies the stricture was dilated and the power to swallow liquid food restored. He then returned home, having learned to introduce the bougie himself. In time, however, he lost the art of passing the instrument, and in October returned, in the same condition as before. Diligent trials to dilate the stricture a second time gained only a slight temporary power of passing small quantities of liquids a day or two at a time, and within a week or so it was perceived that his progress was downward and that he was slowly starving; moreover the points of the bougie seemed to be creating a local inflammation in the right lung, as if they were making a false passage in that direction; to continue their use, therefore, was not deemed judicious and they were accordingly discontinued, and an operation was decided upon at once and not allow the patient to become weaker. The operation

was the same as in the former case except that the opening was smaller. The same difficulty of regurgitation of the food occurred and was controlled by a similar valve. The patient is now doing well and bids fair to recover, and at time of reading the paper, thirty-two days since the operation, is improving nicely. The plan pursued by Mr. Howse, of London, and those of other surgeons was dwelt on to some extent, with their advantages, disadvantages, etc., etc. The operation should be done with extreme caution. Regarding the statistics of this operation, this is not very cheerful. Of 207 recorded cases, forty were for cicatricial stricture of the œsophagus like those just recited. Of these forty, twenty-one died. Yet, when no other hope of life or relief is offered, an operation which gives them one chance in two is a great benefit.

Excision of the rectum, of which the author cited two cases that he at present has under treatment, as follows:

Case I. was epithelioma, not reaching down to the verge of the anus. In operating, the entire external sphincter was saved, the incision was carried from an inch in front of the anus back to the coccyx, opening the anus anteroposteriorily and cutting off the gut just above the verge. After dissecting it upward a little and tying numerous vessels, the rectum was separated from the pelvic chamber mainly with the finger and the *tube* divided about three inches upward, just above the top of the cancer. There was no shock and not much subsequent pain or inflammation.

The second case was almost exactly a repetition of the first, except that the verge of the anus was involved in the disease, and consequently was dissected out with the rest. Both patients are doing well and are exceedingly comfortable, but it is too early to state whether there will be any return of the disease.

Statistics: The statistics are much like those of epithelioma elsewhere. Billroth, of Vienna, thinks he permanently saves about one-third of the cases. Other authors were cited, and lastly, of 608 cases collected, 140 died of the operation, and of one hundred of those who survived the operation whose accounts were traced up, thirty-one were doing well at the end of the year, and seventeen were alive and well with no return at the end of three years.

LITHOLOPAXY.

Dr. Andrews has operated twenty-three times, with one death. He is confident that the plan he pursues, of keeping the nerves of the bladder benumbed during the operation by filling it with carbolized water, tends powerfully to prevent both shock and inflammation. It is worthy of inquiry, said he, whether the remarkable local anæsthetizing properties of the new agent, cocaine, would not enable us to operate without ether and without producing shock. * *

A new instrument for operating on varicocele was the next topic discussed by the writer. Operations for destroying the veins in varicocele have produced occasionally death, and in other cases resulted in neuralgic scrotum with or without atrophy of the testicle. Many surgeons have followed the lead of Prof. Frank Hamilton in preferring Sir Astley Cooper's plan of shortening the scrotum sufficiently to make it its own suspensory bag. This operation is vexatious, because the imperfect character of the old-fashioned adhesive plasters rendered it difficult to support the sutures sufficiently to secure union by first intention. Now that we have the rubber plaster, which never lets go its grip, we can cut the scrotum very short, and still hold the wound firmly together and secure a triumphant success. Sundry clamps have been invented to hold the skin of the scrotum firmly while the surgeon cut it off and sewed it up. The evil of the clamp is that it compresses the arteries, so that after cutting away the pouch, the surgeon is unable to find and ligate the vessels. If he sews up the wound without attending to this point, experience shows that after the clamp is removed hæmorrhage often takes place inside the scrotum, distending it with clot and forcing open the wound, thus delaying the cure. To meet this difficulty the author has devised a kind of varicocele bow, which he exhibited and described as follows: It consists of two curved parallel bows connected at the ends and enclosing a slot three-eights of an inch wide between them. Twelve holes are drilled through the bars of a size to admit ordinary pins. The surgeon draws the scrotum through the slot (having the concave border toward the base of the scrotum) to such a distance as he deems sufficient, secures it there by inserting one by one as many pins as he finds necessary to hold the pouch securely. He then cuts off the scrotum outside the convex border of the bars. As the scrotum is not pinched by the instrument, the blood spouts freely, especially from the artery at the raphe. The operator can carefully and deliberately secure every bleeding point. This being accomplished, he sews the cut edges together, and then drawing out the pins removes the bow and applies his plasters. The neatness and despatch of the operation are thus greatly enhanced.

An interesting and appropriate paper, "The Fourth Annual Report of the Shan-Tung Dispensary and Hospital at P'ang-Chia-Chuang," prepared by Dr. Henry D. Porter, who was for a number of years a resident missionary in China, was read by Dr. John H. Chew.

The report was an able one, and contained the essayist's views and experiences in Oriental diseases. The address also of the gentleman delivering it was keenly appreciated, by the expression from the Society in the form of a vote of thanks. But for want of space we are obliged to forego its publication at this time.

In behalf of the Committee on *National Sanitation*, Dr. John Bartlett presented the following report:

Mr. President: The committee appointed at the meeting of this Society, Sept. 15, 1884, to consider and report upon a series of resolutions presented by Dr. Liston H. Montgomery, having reference to *National sanitary* matters, respectfully report the following preamble and resolutions as suitable to be adopted.

WHEREAS, Experience has firmly established the fact that the ravages of certain infectious and conta-

gious diseases may be in good measure prevented, controlled or arrested by the enforcement of suitable sanitary regulations, and

WHEREAS, The United States is constantly exposed to the importation of disease from foreign countries, and, because of the facility and rapidity of inter-state transit to the rapid spread of infection once finding lodgment on our borders; and

WHEREAS, This exposure, because of the prevalence of cholera in Europe just now, is unusually great, and

WHEREAS, The facts are that matters of sanitation are in some of the States of this Union entirely neglected, while in others they are simply taken cognizance of by the appointments of Boards of Health, in their functions, advisory only, and not vested with powers of authorative action; and

WHEREAS, Either of these State Boards of Health as now constituted may prove derelect or inefficient in its duties, or act without concert with, or even in antagonism to the Boards of other States, and

WHEREAS, The exigencies occasioned by the appearance of violent epidemics, demand organized means for the prompt recognition of the outbreak of disease, and vested authority, limited in its area, by the boundaries of country only, to take such immediate steps in matters of protection, as vaccination, isolation, quarantine, etc., as experience has taught to be useful; and

WHEREAS, No National authority in sanitary matters now exists, therefore

Resolved, That it is the judgment of the Chicago Medical Society that the sanitary interests of the United States demand the establishment of a National Health authority, which shall have for its main functions, the detection of pestilential and epidemic diseases, and the enforcement, where necessary, of sanitary regulations tending to prevent, to abate, or to suppress them.

Resolved, That as a step toward the consummation of the idea suggested in the foregoing resolution, a committee of three be appointed by this society to collate facts, tending to show the usefulness, and necessity of a National sanitary organization, and to compile the same in such form as may be available for disseminating information upon, and creating an interest in National sanitary legislation.

Resolved, That the said committee be empowered and instructed to urge the importance of national sanitary legislation upon the attention of the congressional delegation from Illinois, and fittingly to present the subject to the Representatives of the People in both Houses of Congress.

All of which is respectfully submitted,

O. C. DE WOLF, *Chairman.*
R. E. STARKWEATHER,
L. H. MONTGOMERY,
JOHN BARTLETT,
J. H. ETHERIDGE,
A. R. JACKSON,
J. H. HOLLISTER,
} Committee.

Upon motion duly seconded, the resolutions were voted for "seriatim," and were unanimously carried.

Then another motion that the suggestions embodied therein be adopted, also unanimously prevailed, and Drs. John Bartlett, Ralph E. Starkweather and John H. Hollister were appointed members of the committee.

The following interesting papers were then read by Drs. Boerne Bettman, and Jefferson Bettman.[1] And at a late hour, a motion prevailed that the society do now adjourn.

"MURIATE OF COCAINE AS A LOCAL ANÆSTHETIC," BY DR. BŒRNE BETTMAN, M.D., CHICAGO.

Hardly two months have passed since the introduction of this valuable adjunct to medical science. Already many clinical and physiological observations have been made and noted down in our medical archives. Glowing indeed are the descriptions sent to us from the East of the wonderful effects of this drug. To Dr. Noyes must be assigned the honor of having first called the attention of American physicians to this new anæsthetic. In his letter from Kruznach, dated September 19, he briefly reviews the work performed by the Ophthalmological Congress in Heidelberg, and devotes particular attention to the interesting experiments performed by Prof. Becker in the presence of the assembly with the muriate of cocaine. These remarks relating to the new discovery were the first intimation of the existence of so powerful an anæsthetic and of so great a boon to suffering humanity.

The next number of the New York *Medical Record*[2] contains short articles by Drs. C. R. Agnew, W. Oliver Moore, and James L. Minor, relating to the matter in question.

These gentlemen report eight cases treated and operated on under the effects of this drug. The results elicited appear magical, and have called forth unbounded enthusiasm. The publications of Drs. Gruening[3] and Claiborne demonstrated the wide range of utility of the article. Tenotomies, iridectomies and cataract operations have been made after instilling a few drops of a 2 per cent. solution of cocaine into the eye, without the slightest discomfort to the patient. A case of hypertrophic catarrh is also mentioned, where the galvano-cautery was applied to the inner part of the anæsthetized nose without pain. Dr. Knapp's experiments relating to the physiological action of the drug, demonstrate its benumbing effects on the eye, rectum, urethra, and other mucous membranes of the body. My friend, Dr. A. W. Harlan, has in several instances filled teeth, which were rendered insensible to touch by a drop of the cocaine. Dr. Polk has used it successfully in two operations upon the cervix uteri.[4] It appears that Dr. Koller, the student of Vienna who discovered the application of muriate of cocaine to the eye, became aware of its anæsthetic qualities from

[1] For paper of Jefferson Bettman, M.D. See Original Articles in nex number of JOURNAL.
[2] *Medical Record*, Oct. 18, 1884.
[3] New York *Medical Journal*, Nov. 7, 1884.
[4] *Medical Record*, Nov. 1, 84.

seeing it applied to the larynx by German specialists to deaden the sensibility of the vocal cords.

The remedy is the alkaloid, the active principle of the leaves of erythroxylon coca, a shrub growing extensively in South America. I succeeded in obtaining a few grains of the highly prized drug, which I used with excellent results in the following cases. In order to acquaint myself with the action of the remedy, I first tried it on the left eye of my brother; also on my right eye. A short account of my observations may serve as an introduction to the clinical data:

I instilled two drops of a 4 per cent. solution of muriate of cocaine into the left eye of my brother, Dr. Jefferson Bettman. After a few moments he remarked that the eyelids felt stiff. In two minutes complete anæsthesia had set in. I now was able to touch the inner surface of the lids, the cornea, and other parts of the globe, with a probe, brush and finger, without giving him the slightest pain; in fact the only intimation of these manipulations was revealed to him by the sense of sight.

His myopia in this eye is equal to 2.5 dioptrus, with a glass of this strength V=$^{6}/_{6}$. Sensibility began to return at the end of ten minutes, application of a probe, brush or finger to the eye, now caused him to wink; though producing but slight discomfort. Complete sensibility returned only after 15 minutes. The pupil began to dilate at the expiration of 16 minutes, the mydriatic effects of two drops of cocaine was moderate.

Dilatation gradually increased, at 12 o'clock, two hours after the application, the mydriasis was middling. These experiments were repeated the next day, the effects were more pronounced and lasting on repeated application of the remedy. Four drops produced complete, ad maximum dilatation in 25 minutes, still the iris responded promptly to light. The pupil did not regain its normal size until the next day, 24 hours later. The range of accommodation was not perceptibly influenced.

At five minutes past two in the afternoon two drops of cocaine were put into my right eye. Three minutes later sensibility was decidedly diminished, two drops more were instilled at ten minutes past two, and at 2:14 two more drops. A quarter of an hour after the first instillation, the eye was in a complete anæsthetic condition; pressure of a probe against the cornea was not felt, neither did the application of a brush, pin or forceps cause the slightest annoyance. Dilatation of the pupil became perceptible after a quarter of an hour. My eye is emmetropic, the weakest convex glass + 72, produces a cloudiness of vision. After the eye had been rendered insensible to touch, my distant range of vision remained the same, + 72, producing slight obscuration of sight. My near point had receded from 4 inches to 12. It required a convex glass of 14 to enable me to read Snellen 0.5, at 4 inches from the right eye. This I could do with the left eye unaided. At the expiration of half an hour my pupil was dilated almost ad maximum, sensibility now began to decrease, the benumbing effect of the remedy had entirely passed away in three-quarters of an hour.

The Mydriasis lasted eight hours.

The outer surface of the right lower lid was also rendered insensible to touch, the pricking of a pin not being noticeable on this lid, while it was painfully evident when applied to the left lower lid.

CASE I.—Oloff D., æt 33, on examination was found to be hypermetropic 2.d. in the right eye, 1.5.d. left eye; there was also a chronic dacyocystitis and stricture low down in the nasal duct. Before attempting the passage of a Bowman's Probe I instilled several drops of 4 per cent. sol. of the muriate of cocaine. In not quite two minutes a probe was pressed against the cornea and not felt by the patient. The pupil dilated ad maximum in ten minutes. Weber's knife was introduced into the canaliculus, shoved forward into the sac and the duct slit open. The last act of the operation caused some pain, while the first steps passed unnoticed. I now injected by means of an Anel's syringe, several drops of muriate of cocaine through the sac into the nose. At the end of about five minutes I passed the probe and forced the stricture which was very firm. The pain was but trifling, 75 per cent. less than that experienced five years ago, when he had been subjected to a similar operation. A stronger glass was rejected. The anæsthesia began to decrease in twelve minutes, when he left my office a few minutes later, the parts had returned almost to their normal state. The accomodation was decidedly affected in the near point having receded several inches.

CASE II.—A policeman came to me with a foreign body embedded in the cornea. The eye was very sensitive, the piece of steel having been in situ three days. Two drops of cocaine produced complete insensibility of the eye in two minutes. The digging out of the mote with a spud was entirely painless. The drops of cocaine mixed with tears ran down over the cheek into his mouth and produced a numbness of that side of the tongue bathed by the fluid.

The application of this remedy in other parts of the body is equally beneficial.

CASE III.—Mr. M. consulted me for a terrible ear ache, due to an Otitis Media Purulenta Acuta. He was suffering great pain and would barely permit the introduction of a cotton holder into the outer meatus. The introduction of two drops of cocaine was followed by almost immediate cessation of pain. I syringed the ear, cleansed it thoroughly, several times I purposely touched the M. T. with the probe and he felt absolutely nothing.

CASE V.—The most striking results I have thus far obtained were in the case of Mrs. T., on whom I operated for cataract November 2d. The instillation of several drops of cocaine, repeated every few moments, produced in ten minutes complete anæsthesia. The patient was placed in bed, a speculum introduced between the lids. This the patient felt slightly.

The eye was now grasped with a fixation forceps. which I afterward found was entirely unnecessary, since she held admirably well. The corneal section was made without the patient being aware of the fact. She at least did not make it known either by motion of the eye or a cry of pain. The only step in the operation which caused the slightest pain was excision

of the iris. At this stage of the operation when questioned as to the sensation, she remarked it felt as if a pin was pricking her. The cataract was hypermature. The lens was expelled with some difficulty. She expressed herself highly pleased with the action of the drug, assuring me again and again that with the exception of the pricking pain just mentioned she felt absolutely nothing. She had been advised years ago to have the eye operated on, but owing to the dread of any surgical interference and the pain, she had delayed it so long.

In reviewing the above we may tabulate the physiological action and therapeutical effects as follows:

1. It is a powerful local anæsthetic not penetrating in nature, rapid in its effects, which, however, are only temporary.

2. It is a mydriatic, the effect of which is regulated by the strength of the solution.

3. It produces paralysis of the ciliary muscle, the near point receding from the eye. Distant vision is not influenced.

4. By virtue of its benumbing powers it may be classified as an anodyne.

LISTON H. MONTGOMERY,
Secretary.

STATE MEDICINE.

STATE BOARDS OF EXAMINERS.

WHEELING, W. VA., November 5, 1884.

N. S. DAVIS, M.D., EDITOR OF THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

My Dear Doctor:—I have read your editorial on "State Boards of Medical Examiners" in last Saturday's JOURNAL with inexpressible sorrow, for the reason that your words and opinion on the subject, however untempered and erroneous in argument, will be instantly caught up—because of your high professional position and great influence—and effectively used by cunning quacks to antagonize and defeat the passage of the proposed law in Ohio to protect the people of that State against ignorance and villainy in medical practice.

Within the past three years Ohio has become a sort of *penal colony* for medical quacks who have been driven from Illinois and West Virginia by the operation of wise laws in these two States for the protection and safety of the people against ignorant, incompetent, and unprincipled persons calling themselves physicians. Indeed, to such an extent has Ohio been invaded by pretenders in medicine and surgery, that at present the State is almost overrun by that class of doctors, and the medical profession proper is thereby accordingly disgraced. Yet this large army of quacks are trembling in their boots from fear that the next Legislature will deprive them of their present liberty to trifle with human life and the public health.

How they will thank you for coming so unexpectedly and influentially to their aid in opposing the deliberate judgment and earnest, heartfelt wish of the Fellows of the State Medical Society! They will carry in their hearts and on their lips your comforting opinion that "to establish State Boards of Examiners, and confer on such Boards unlimited power to determine what shall constitute a proper medical education, * * * is not only contrary to the genius of our governments, State and National, but is putting into the hands of a few men a power which they may wisely and honestly exercise in such a way as to elevate the standard of medical education, * * * or they can just as readily wield it in such a way as to lower that standard, and foster both ignorance and oppression."

But admitting the possibility of the appointment of unworthy and bad men, is that a sufficient argument to discourage the establishment of such Boards? May not the highest office in the national government, as well as within the gift of the State, be abused and disgraced by an unfaithful and incompetent officer? Are not such examples found both in Church and State? And should organized government, therefore, be opposed because of the possibility that bad rulers may endanger the liberties of the people? Should holy religion be decried because of the unfaithfulness sometimes of priests and bishops?

Your argument, to have point, should have given an example of the abuse of power by an Examining Board, and the community in which such "ignorance and oppression" have lowered the standard of the medical profession.

Can you for a moment doubt the good effect of the law regulating the practice of medicine in your own State—Illinois, its success as a means of restraining quackery and encouraging higher medical education? Can you question the wisdom of the Legislature in passing the law? Also the learning and justice of the decision of the Supreme Court in maintaining the constitutionality and validity of the Medical Practice Act? Can you doubt the higher standing of the medical colleges in the State of Illinois since the establishment of the State Board of Health? And can you deny that the *esprit de corps* of the medical profession in Illinois has been greatly improved by the labors of the State Board of Medical Examiners?

If you answer "Yes" to these questions, then let me beg you to turn your attention to West Virginia and compare the present rapidly rising standard of medical education under the influence of the statute regulating the Practice of Medicine and Surgery, with the situation four years ago, when any ignoramus could don the name Doctor and prey without hindrance upon the lives and property of the people; when the *passport* of such disgraceful diploma mills as the *Physio-Eclectic Medical College of Ohio*, run by Nicely, Van Sickle & Co., at Cincinnati (now, the *American Eclectic Medical College of Cincinnati, Ohio*), could not be questioned; and when traveling medical-showmen were permitted to beguile the people and carry off their substance,—I say compare the days of such unlicensed medical practice with the present orderly registration of those legally qualified to practice, and you will find many complete and convincing answers to your surprising and, I think, pernicious criticism on "State Boards of Medical Examiners," as well as to your vigorous protest against

the passage of laws that hinder the liberties of impostors in medicine.

In neither of the States having Boards charged with the duty and power to regulate medical practice has there been shown the slightest excuse for your seeming *dread* of official discrimination against "any sect" or so-called school in medicine. Like the sciences of mathematics and philosophy, anatomy, physiology, chemistry and pathology are precisely the same in all languages and in all colleges or schools of medicine; and it is the *quantity* of correct knowledge of these and other elementary branches that fits a man or woman for the office of physician and surgeon, and entitles him or her to legal protection—not that he is "regular" "homœopathic," or "eclectic" in his practice or treatment of diseases.

But you may challenge my presumption in demurring to your utterances disfavoring the passage of the proposed Medical Bill in Ohio. If so, let me assure you of West Virginia's hearty sympathy with Ohio in this matter. We are gathering every day good and substantial fruits from the operation of the law regulating medical practice, and earnestly desire that our professional neighbors "o' the border" shall be saved from the continued shame and mortification of witnessing the coming to their midst of quacks who have been denied a resting-place in West Virginia.

Last week the Supreme Court of Appeals of West Virginia placed the State Board of Health on high legal ground; and thus our labors in medical registration have not been in vain. In a case brought up from an inferior court by a man who had been refused registration on the basis of a diploma from *The American Eclectic Medical College of Cincinnati, Ohio*, the Court unanimously decided: 1st, that the law regulating the Practice of Medicine and Surgery is constitutional and valid; and, 2d, that the question of the reputability of a medical college is to be decided by the State Board of Health—not by the courts.

And now, if I have shown much earnestness in my effort to parry your hard blow at State Boards of Medical Examiners, you must charge it to my fear that your opinion may do great harm in Ohio, and indeed wheresoever an effort shall be made to secure similar legislation. But I beg you to believe me none the less Your sincere friend,

JAMES E. REEVES.

BOOK REVIEWS.

DISEASES OF THE NOSE. By CLINTON WAGNER, M.D. New York: Bermingham & Company. Cloth. 247 pages. Price, $2.50.

After introductory chapters on the anatomy and physiology of the olfactory apparatus, the author fully discusses the diagnosis and treatment of the various diseases affecting its several parts. Respecting nasopharyngeal polypi of a malignant nature he quite properly recommends radical treatment. This requires a formidable operation in order to sufficiently expose the growth for complete removal. It is imperatively demanded at an early day as the natural termination of the disease is death, and delay simply increases the difficulty of the operation. The book contains some very good illustrations and the report of numerous interesting cases. C. E. W.

VISCERAL NEUROSES. By T. CLIFFORD ALLBUTT, M.A., M.D. P. Blakiston, Son & Co. Philadelphia: 1884. Cloth, 103 pages. Price, $1.50.

This brilliant little book contains three lectures delivered at the Royal College of Physicians in March, 1883.

The author in his preface calls attention to the humbuggery of modern specialists, and in his introductory lecture makes a most telling attack upon the bad practice of gynæcologists.

The second and third lectures consider respectively gastralgia and enteralgia, differentiating, these affections from hysteria, a distinction often lost sight of.

His plan of treatment is based upon the general principle that neuralgia is the result of an exhaustion of the general vitality of the patient.

The work is written in charming style, illustrated by many cases from the author's practice, and published in a good type; thus it is easily read, entertaining and instructive. C. E. W.

MISCELLANEOUS.

OFFICIAL NOTICE.

ANNUAL DUES from members of the Association—*Five Dollars* per annum—are payable directly to the Treasurer. Such payment entitles them to receive the JOURNAL of the Association for one year.

SUBSCRIPTIONS TO THE JOURNAL from those who are not members should be forwarded to the office of publication, Chicago.

BACK VOLUMES OF THE TRANSACTIONS may be procured, at reduced rates, by addressing the Treasurer.

THE INDEX to the 33 Volumes of Transactions will be forwarded, postpaid, on receipt of *One Dollar* by the Treasurer.

According to a resolution passed May 9, 1884, at the Washington meeting, continuous payment of Annual Dues is required, to retain permanent membership. RICHARD J. DUNGLISON, M.D.,
Treasurer.

Lock Box 1274, Philadelphia, Pa.

OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY DURING THE WEEK ENDING NOVEMBER 15, 1884.

Beardsley, Grov. S., promoted to the grade of Medical Inspector, April 24, 1884, Nov. 14, 1884.

Heffenger, A. C., Past Assistant Surgeon, duty at Portsmouth, N. H., continues till Dec. 12, 1885, Nov. 11, 1884.

Wieber, F. W. F., Assistant Surgeon, to the receiving ship "Vermont," at New York, Nov. 12, 1884.